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CANINE MADNESS IN EDINBURGH.*

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THE observations which I purpose to make to you in connection with this disease to-day, consist of a collation of facts derived from a number of well-observed cases, the particulars of many of which were recorded by me as they occurred. I do not intend to give you an exhaustive paper on the subject, nor can I advance much that is new; but I do hope that I shall be so enabled to place before you the facts connected with this outbreak, as to render my remarks at least interesting, if they may not be very conclusive.

I must confess at the outset that, from the opportunities which have been afforded me of studying this dire malady more extensively than I have heretofore been enabled to do, I have arrived at conclusions as to its nature and characters somewhat different to those I had before entertained, and conclusions, I trust, which may assist other workers in the same field in making some useful discoveries.

History.—For the first five years of my residence in Edinburgh no case of Rabies came under my notice, and up to the time of the extensive epizoötic in Glasgow, I thought that Scotland was peculiarly favoured in the immunity it enjoyed in this

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respect. During the last three years, occasional and well-marked cases have occurred in the practice of my colleague, Mr. Baird, and myself.

In the month of September, 1879, Mr. Baird's attention was directed to a retriever dog, the property of a person residing in Abbey Hill, which, it was stated, had become very vicious and strange, and had bitten one or two boys and a number of dogs. This animal was brought to the college and carefully watched. The nature of his ailment becoming distinctly marked in the course of two days, he was destroyed.

On the 14th, 16th, 21st, and 23rd February, on March 15th, on April 23rd, and on May 9th, 12th, 14th, 22nd, and 28th, other cases respectively occurred, and from that time to this I am within the mark when I say that upwards of thirty cases of the disease in dogs and horses have come under my immediate notice; while the history of other thirty or forty has been related to me by different practitioners and other competent observers residing in and around Edinburgh.

Origin of the Outbreak.—On this point nothing definite can be advanced. Setting aside any opinions which may, by individuals, be entertained as to the probability or possibility of the disease being autogenously developed, it does not require any great stretch of the imagination to enable us to see how it may have been introduced from the West of Scotland or from the Northern and Midland Counties of England, in some of which it has been a permanent pest for years.

Form of the Disease.—The very great majority of cases have partaken of the characters of the so-called dumb or sub-acute madness, while some have, again, given evidence of the identity of the two recognised forms of the affection; but of this, more anon.

Spread of the Epizoötic.—Though, as I have shown, our first case was brought from Abbey Hill, the disease rapidly extended over the city and its environs into Leith, and for a radius of several miles through the surrounding country; but its fury has undoubtedly been more concentrated in the Newington and Morningside districts than elsewhere. One very remarkable circumstance in connection with its spread is, that our cases have,

on the whole, occurred in batches of three or four, and most frequently during the three days of the week intervening between Friday and Tuesday. This circumstance is, of course, a mere coincidence.

Breed, Sex, and Age of the Victims.—Contrary to the opinions generally entertained, the miserable pariah, the uncared-for waif, the unhappy canine vagabond has not in this outbreak been the chosen victim of the malady, as with very few exceptions the cases which have come under our notice have occurred in animals of distinct breeds, which have been well cared for, and often loved and loving household pets. The retriever, the collie, the spaniel, the mastiff, the bulldog, the English, Scotch, and Skye-terrier, the Italian greyhound, the pug, may be all named amongst the rabid host, though without doubt the retriever and the collie have been the most frequent sufferers. Of the sexes, in neither one has the disease predominated, and it has occurred in animals of all ages, the youngest I have seen being fourteen weeks old.

Duration.—The average duration has been about three or four days, a few animals living six or seven, a few others dying in two days after the first appearance of the symptoms.

Period of incubation very variable, as in all outbreaks of the disease. The average period of those cases in which reliable data were at hand was about six weeks; in one instance only ten days elapsed.

The percentage of successful inoculations must, I think, be comparatively small; but while on this point no reliable evidence is attainable, we can arrive at a tolerably definite conclusion from the number of animals known to have been bitten by rabid dogs. In one case out of three animals bitten—viz., two horses and a dog—only one horse has, after the lapse of nearly four months, shown any signs of the disease.

Symptoms and Causes.—The early symptoms are nearly identical in both the acute and the sub-acute forms. They are, most prominently, alteration, more or less marked, in the habits of the animals, and in their affections. From previously being contented and happy and loving to their human and brute companions alike, they become morose, snappish, irritable, easily excited,

and dissatisfied, wandering mopishly, uneasily, or excitedly about; absenting themselves from home for hours at a time, and returning weary, jaded and often beplastered with mud and dirt. In some a destructive tendency is evinced: baskets, hampers, ropes, straps, woodwork, chairs, bedding and other materials being bitten to pieces with a relish, the splinters or *débris* often being swallowed at the same time.

In the sub-acute form some animals become even more affectionate than usual, have a wistful, anxious expression of countenance, and seek protection and comfort from their human companions, or by hiding in out-of-the-way places.

A low, dry laryngeal cough is often present at the outset, frequently accompanied by continual and distressing hawking and retching, which leads many owners to suppose that a bone or other foreign body has become lodged in the throat. This symptom is due to the congested condition of the laryngeal mucous membrane, sometimes aggravated by the lodgment of hair and straw around the base of the epiglottis. Vomition is frequently present, sometimes distressing and persistent, the vomit being variable in character and quantity; appetite in total or partial abeyance, or voracious and morbid, and as the case progresses attempts at deglutition are abortive, fluid returning through the sides of the mouth as rapidly as it is taken in. This is no doubt due to paralysis of the pharyngeal and other deglutatory muscles, and as death approaches it becomes more pronounced.

The voice, from the impression on the nervous system and the congested condition of the mucous membrane of the vocal cords, becomes entirely altered, the bark being either of a vicious, snappish character, deep and howling, plaintive or husky.

The mouth is sometimes hot, fœtid, and dry; at others, very moist; while at others, a quantity of viscid, adhesive spume collects about the lips, causing the patient to make persistent attempts to remove it with the paws, or by rubbing the lips against the bedding; rarely, sordes is present. In many cases the animal persistently licks one or all of the legs, or the tail; sometimes to such an extent as to saturate the hair with saliva, and when the brain is much affected there is licking of the bed-

ding. In only one or two instances has there been any tendency to bite or tear the skin of the limbs.

The tongue frequently hangs pendulous from the mouth; is often moved with a tremulous motion; sometimes dry, hot and livid; at others moist and normal in condition.

The bowels may be constipated or relaxed, but if the former at the outset of the attack, it is superseded by diarrhœa—often involuntary, the discharge being of a brown (bile or blood-stained) colour, and fœtid.

Hiccough—a very rare phenomenon in the dog—has been well marked in one or two instances.

The nose is, most usually, dry, with foreign matter adherent to it, and occasionally a quantity of muco-purulent discharge flowing from the nostrils.

The Eye.—At the outset not much altered, and in some cases there is but little departure from the normal throughout the whole course of the disease; in others, on the contrary, the eye has a dull expression, the cornea being covered with a film of viscid mucus; while in others, this organ presents marked indications of brain derangement by its dazzling expression, injection of the retina sometimes giving it a bright red (ferret-eye) gleam, and while in some instances the conjunctiva has not been materially altered, in others it has assumed a dark-red or reddish-yellow colour and has thrown out large quantities of muco-purulent matter. The eyelids appear, in some cases, to be swollen, while in others, in the advanced stages, there is retraction of the eye-ball. In nearly every case, where pressure on the brain is not great, the pupils are dilated.

The respiration in very many cases is normal up to the latest stages, the most marked alterations in this function being paroxysmal attacks of Dyspnœa, terminating in temporary and complete prostration.

The Pulse.—For obvious reasons the observations as to its condition are imperfect; usually rapid through the earlier stages of the disease, it sometimes becomes abnormally slow and very weak in the later, depending upon the amount of brain-pressure.

The temperature runs up to 104-5° F. in the earlier, but becomes very low in the late stages; in one or two instances I found it

below 95°; the external temperature becomes excessively low also, especially that of the limbs.

The nervous phenomena are very various and very numerous; they are, in some cases, slightly, in most, well marked. They vary from extreme rage and delirium to stupor, indifference, and paralysis. In few, however, is there actual coma, more or less intelligence being preserved to the last, and in some cases the animals, even a short time before death, recognise their owner or attendant.

In all, the brain symptoms are more or less paroxysmal in character, lucid intervals alternating with hallucinations of the mind; the latter being shown by the animal wandering about, apparently in search of something, or running the eye up a wall, or catching at imaginary objects, or fixing the gaze upon some particular spot with an unmeaning expression of countenance. The latter in some cases, especially in the bulldog, has a strikingly human aspect.

In almost every advanced case paralysis, commencing posteriorly, sets in. Sometimes, however, it too is intermittent.

In the sub-acute form, the paralysis (dropping) of the lower jaw is the most pathognomonic and most constant symptom. It usually makes its appearance about the second or third day, and while it may be quite pendulous when the animal is quiescent, the power of biting—in a modified degree—is retained, the grasp on a stick or staff being sometimes firm. In many cases the act of biting is more of a stroke than a grip, and in some the patient shows a greater determination to bite as the disease advances, especially if at all irritated by attempts to administer medicines or to control its movements.

Muscular spasm—sometimes tonic, at others clonic—is often present, as is also shivering and rigors.

The two cases which have come under my notice in the horse present marked differences in character.

No. 1.—A grey pony, about twenty-eight years old, which had never had a day's sickness or a dose of medicine in his life, was bitten by a fox-terrier on May 11th. The bites were numerous, and situated on both arms and the breast, the dog having returned to the attack, although previously a constant and affectionate companion, after being driven away.

The first unusual symptoms were evinced by the pony on the 15th June, and he was shot by myself on the 18th.

Paralysis, cataleptic fixation of the fore legs, shivering, loud neighing, and great uneasiness were the prominent signs. On two or three occasions only was the animal observed to bite or rub the legs.

The mental powers were unimpaired throughout.

No. 2.—A brown Shetland mare pony was bitten on the right nostril six weeks before attack, the dog clinging tenaciously to the nostril, until removed by the owner, who immediately washed the wound and applied cupric sulphate freely; there is no doubt the animal was also bitten in the fore leg.

I was requested to visit the pony on the morning of the 18th of July, when I found her breathing hurriedly and with difficulty, the nostrils being widely distended and the fore legs abducted. On the owner going to her head to bring her towards me for examination, her whole frame was thrown into violent convulsions; she commenced to cough paroxysmally, rubbed her nostril against her legs and the bedding, and scratched it with her hind foot; gripped the arm savagely and desperately with her teeth, pawed, and finally threw herself down and tried to roll: that there was some interference with the deglutatory function is proved by the fact, that some oil administered by the owner had found its way into the bronchial tubes.

If food was offered her she ate ravenously for a short time, and she had attacked her owner with her teeth. She perspired freely; the eyes were bright; the conjunctivæ injected. I shot this animal immediately I had examined her.

Death is undoubtedly produced in the majority of cases by exhaustion, in some by asphyxia, in a few by *ante-mortem* cardiac clotting.

Diagnosis.—The necessity for making a correct diagnosis in the case of a malady of this kind is palpable to all, more especially as it sometimes happens that the cry of "mad dog" is sufficient to lead to the adoption of measures eminently calculated to produce cerebral disturbance.

When an outbreak of the disease is firmly established, there is not much difficulty; but in isolated cases, and in districts where

the affection is practically unknown, some circumspection is required in order to prevent the creation of unnecessary alarm, and some doubts may arise at the outset as to its true nature. Seeing that the dog, and indeed—with the exception of cattle—animals generally are not subject to frequent attacks of idiopathic cerebral disease, we may, in the first instance, safely assume that if an enzoötic or epizoötic occurs in which cerebro-spinal symptoms predominate, we have therein a grave element of suspicion, especially when acquired viciousness is a prominent phenomenon.

In the dog the affection with which Rabies is likely to be confounded is the Cerebro-spinal Meningitis so commonly resulting from Catarrhal Distemper, more especially when there is any tendency to viciousness or self-mutilation ; but in these cases there is usually obtainable a prior history of catarrhal disease, and, moreover, the cerebro-spinal lesions of Distemper are usually accompanied by well-known fits of an epileptic character, or chorea, or both ; and it is rare that we have difficulty in swallowing, though there is often voracious and sometimes morbid appetite. The epileptic fits of puppies produced by the irritation of intestinal parasites are too distinct in their character to render them at all liable to be confounded with the cerebro-spinal symptoms of Rabies.

In some cases of constipation of the bowels, or retention of fæces, with the existence of a local irritant in the rectum, there is spinal paralysis,with irritability, whining, and uneasiness, which, however, pass off with the removal of the cause.

In any case, the altered habits and acquired aggressiveness, the altered tone of voice, the manner of invasion, the course of the disease, its fatal termination, the inoculability of the bite, with the *post-mortem* lesions, will enable the practitioner to arrive at a correct diagnosis.

In the case of cattle and horses we certainly have to deal occasionally with cerebral derangement resulting from primary gastric derangement, with Phrenitis, symptomatic or otherwise, and with cases of deliriant poisoning which may present some of the characteristics of Rabies ; but we have rarely any difficulty in tracing such cases to their true origin.

The post-mortem appearances are briefly as follows, varying in degree and in localisation in most cases:—

Larynx.—Mucous membrane, especially of the aryteno-epiglottidean folds, the seat of venous and occasional arterial congestion; no ulceration or necrobiotic change of any kind; in one or two cases coated on its surface with purulent matter—this was especially observed in one of Mr. Rutherford's cases—hair, straw, and other such like material often found around the base of the epiglottis and in the fauces. In specimens prepared by Mr. A. Grey, the small blood-vessels are seen much dilated and gorged with coloured corpuscles.

Trachea and Bronchia.—Usually healthy, occasionally the mucous membrane hyperæmic. Bronchioles, when pulmonary lesions are present, contain frothy serum.

Lungs.—In some cases healthy; in others, the seat of circumscribed congestion, giving them the appearance of being dotted over with purple-coloured spots; in some cases there is actual circumscribed Apoplexy.

Stomach.—Sometimes empty, with the exception of a small quantity of bile-stained or chocolate-coloured fluid; in others, contains small quantities of food or foreign matter, or both; while in others (especially in acute cases) it is packed with a heterogenous mass of hair, twine, tow, wool, flock, straw, hay, splinters of wood, horse-beans, oats, barley, etc.

The mucous membrane is the seat of arterial or venous congestion—particularly on the surface of the rugæ. Occasionally circumscribed mucosal hæmorrhages of a dark colour are observed.* In only one case have I seen marked destructive changes, and in that (from the distribution and extent of the lesions, and the comparatively sudden death of the animal) I am satisfied some corrosive agent had been partaken of.

The Intestines.—The lesions peculiar to these organs are most marked when Diarrhœa has existed during life; they consist mainly of mucosal hyperæmia, sometimes venous, at others arterial. Various foreign matter is found in the intestines, and occasionally masses of hair arrested at the ileo-cæcal junction.

* And in some cases gastric hæmorrhage.

The fæces usually dark in colour, sometimes blood-stained ; the chyme replaced by bile-stained fluid.

The Heart.—Occasionally some increase in the pericardial (and pleural) fluid ; its walls, however, healthy ; pale, gelatinous *ante-mortem* clots sometimes present when the disease has been allowed to run its course.

The Blood.—In this fluid one important change takes place to which I wish particularly to direct your attention. It becomes in the latest stages viscid (but only semi-coagulated and often fluid), dark in colour, often resembling damson pulp ; and under the microscope the red corpuscles are seen to be crenated, and the blood laden with acicular and other crystals. On first observing the latter I thought they were some form of bacteridiæ, but on requesting Mr. A. Grey, junr., to submit the blood to the usual tests for these organisms, he found they did not answer to the said tests, I therefore came to the conclusion that the walls of the red corpuscles had allowed—owing to some physical change, or to rupture—the colouring matter to escape from their interior, and that the latter had become crystallised.

The Muscular Tissue presents no material change except such as is observed in all similar conditions.

The Brain and Spinal Cord.—The most marked changes observable here are congestion, and sometimes acute Hydrocephalus. The congestion is, in some instances, confined to the superficial veins, in others it extends to the small vessels of the substance of the cerebrum and of the spinal cord.

The Eye.—Marked retinal hyperæmia in all cases where the same condition has been observed during life.

Treatment.—It is obvious to everybody acquainted with the disease that the carrying out of any systematic course of treatment is attended by great risk and difficulty. Nevertheless, I have attempted to do something in the case of three dogs. In the first, I administered anti-zymotics and nerve medicines (sedatives) by ingestion ; in the second, intra-venous injection (twice) of quinine ; and in the third, quinine and salicylic acid were tried ; but with the exception of the intra-venous injection of quinine no benefit was observable, and in that instance the only benefit was a prolongation of life. In the case of the grey

pony, I attempted nothing more than the administration of narcotics and stimulants.

Preventive and Suppressive Measures.—If there is one disease more than another, in the prevention and suppression of which stringent measures are called for, it is Rabies. Mysterious as it is in its character, intensely subtle and destructive, intractable in its course, dangerous alike to man and animals, productive of the most horrible suffering to those who unfortunately become its victims, and, without exception, the most malignant disease to which flesh is heir; it calls for the adoption of the most energetic measures for its arrest. Sentimentalism should not influence, nor should the fear of public opinion prevent, the authorities from endeavouring to get rid of it with all possible speed. It is one of those diseases which ought long since to have been taken in hand by the Government, and grappled with firmly and determinedly until, like Cattle Plague, it is stamped out from our midst. I am quite aware that any so-called strong measures directed against the canine race jar upon chords in the human mind, which would not even be touched by the adoption of similar measures in reference to other animals; but I hold that it is the duty of every citizen loyally to support and assist the authorities in their suppressive endeavours, for what single individual amongst the community can say that he may not be the next to become inoculated with the virus of the fell malady? And what is the temporary inconvenience felt by a few thousand dogs compared to the sufferings of one man—the victim of Hydrophobia? It is thought that the muzzling of dogs is cruelty. As being largely responsible for the adoption of suppressive measures in this city, I do not hesitate to say most emphatically that muzzling, if properly carried out, is not cruel. Leather muzzles are, I grant, either a great cruelty or a great sham: they are cruel when they are applied so tight as to prevent an animal from opening its mouth, or from lapping water, and still more cruel when made of a continuous piece of perforated leather; they are a sham when so applied as to enable a dog to open his mouth as wide as he chooses, or to pull them off his nose and carry them round his neck; or off his neck and carry them in his teeth. But none of these objections can be urged against properly constructed wire

muzzles. I have here one which was obtained for me by a friend from Italy (in which country it is always used) of very light and elegant construction, offering no obstacle to respiration or to the lapping of water, but effectually preventing an animal from biting, or from picking up vile garbage in the streets. One or two simple alterations may be advantageously made in the muzzle. Cruel as it appears at first sight, I think every citizen should rejoice that the suppressive measures adopted have been the means of clearing from our streets so many ownerless, valueless, and often miserable and uncared-for curs. And I imagine there are few amongst us who would have thought a short time ago that such a large number of ownerless animals existed. If some such measures could be applied to the poor mangy and starved cats in the city, much suffering would be spared to the feline race, and a great nuisance to the lieges would be got rid of.

And now, Mr. President and gentlemen, having glanced generally at the characteristics of this particular outbreak, I will claim your attention for a short time to the consideration of the lessons which can be extracted from it.

In the first place, I would remark that it has shown most pronouncedly the gross ignorance of, and crude and misleading notions entertained by, the general public as to the nature and character of the malady. The term *madness* naturally leads to the supposition that the prominent symptoms are of a violent and delirious character, hence most people think that if their dog is *mad* he ought to be running wildly about, tearing everybody and everything to pieces, and foaming at the mouth. Consequently, as the great majority of cases have given apparent evidence at the outset of being of the nature of sore throat, we often find that owners of dogs have been applying remedies most assiduously to this region, have administered castor oil and other medicaments ; have been fondling their animal, and often pushing their fingers into the mouth and throat with the object of extracting foreign bodies supposed to have lodged there, and all this to their own imminent danger, and at the same time increasing the risk of numbers of other animals becoming inoculated. I hold that every owner of a dog should know the usual symptoms of the

malady, and be held blamable for any serious accident which may arise from his own ignorance in the matter.

In the second place, the outbreak has shown that the division usually made of the affection into two forms—viz., *dumb* and *raving madness*—is arbitrary. It were far better to substitute for these terms *sub-acute* and *acute*, for in very many cases—in fact, I may say in all—the characteristics of one form of the disease merge insensibly into those of the other; and that, as in Glanders, Cattle Plague, Foot-and-Mouth Disease, and many other zymotic affections, the exact manner of local manifestation is accidental, and governed by a great number of dissimilar circumstances, which we need not here stay to consider.

Thirdly, it has most strongly indicated, to me at least, that the use of remedial measures of a simply neurotic action can be of no avail. If any advance is to be made in the therapeutics of the disease, it must be in the direction of the employment of catalytics, which will not exert any destructive influence upon the blood, and which must be introduced directly into that fluid; of such agents I know of nothing superior to quinine and probably salicylic preparations. In the intelligent use of such agents, with neurotics and nutrients as adjuvants, I am satisfied will alone be found the means of combating this horrible malady in the human subject, and it is a matter which deserves Imperial consideration.

That the virus of the disease, in its greatest intensity, is eliminated by the salivary glands there can be little doubt, but whether it multiplies in these glands or in the blood is an open question, as is also the further one as to what becomes of the virus during the period of incubation—*i.e.*, does it remain in the tissues into which it has been introduced until some local change occurs which favours its absorption by the lymphatics or by the blood-vessels? or does it pass directly into the blood, and lie dormant therein until some vital or physical change in that fluid takes place to enable it to develop in all its virulence?

The fact that local preventive measures are so often impotent, even though applied efficiently and immediately on the receipt of the bite, favours the latter view; while the opposite fact, that in very many cases no appreciable systemic effects are exerted

for a long period after the infliction of the injury favours the former.

As to the question of autogenous development of the disease, I think it can here be set aside, as much may be said on either side, and my object to-day is rather to direct your attention to the practical aspect of the matter. I must not, however, conclude without directing attention to one ugly feature (which it is stated has been proved) of the affection—viz., that an animal the subject of the disease may, while showing no outward symptom of its existence in itself, propagate it to others; and further, without exposing the fallacy of the supposition that if a person is bitten by a healthy dog, he will become the subject of Hydrophobia if the said dog contracts Rabies at some future date. Equally is it a fallacy to assume that the disease is only seen in hot weather and in hot countries.

SKIN DISEASES IN THE HORSE.

BY GEORGE THIN, M.D., LONDON.

I.—*Sebaceous Tumours.*

MR. G. FLEMING, formerly Veterinary Surgeon to the 2nd Life Guards, now Veterinary Inspector in the Army, to whom I was indebted for being able to see the case, and for the specimen examined, has supplied me with the following history:—

Black mare, aged eighteen years; skin in a very healthy condition, and the mare herself had never shown any symptoms of cutaneous derangement, so far as could be learned. In various parts of the body were discrete, well-defined nodules, varying in size from that of a pea to a small hazel-nut. There were no signs of inflammation or pain in or around these tumours, and the only objection to them was the unsightly appearance they gave the skin.

Microscopical examination of the tumours showed them to be composed of epithelial cells. Some of the cells were flattened, and so arranged as to form a kind of capsule to sub-divisions of the tumour. Within these sub-divisions the cells contained slightly pigmented matter, by which they could be identified as of a similar nature to the cells of the adjacent healthy glands.

The points to be noted in these tumours are the absence of irritation in the surrounding connective tissue, as well as the absence of breaking down in the compact cellular mass of which they are composed.

II.—*Erythema Circumscriptum.*

The following case also occurred in Mr. Fleming's regiment, and I am again indebted to him for the opportunity of seeing it, and for the specimen. The following are Mr. Fleming's notes:—

March 11th.—Purulent abscess in submaxillary lymphatic glands, occurring in a young horse, and simulating that of Strangles. Inappetence, listlessness, and fever were the most marked symptoms. General and topical treatment was pursued until the 17th, when the tumefaction, showing indications of "pointing," was freely opened with the lancet, and a quantity of pus escaped. The appetite was fickle, and the fever did not abate. On the 20th, suppuration, which had not been favourable in the gland, was altogether suppressed, and the head was greatly swollen. There was a profuse muco-purulent discharge from both nostrils, but no notable discoloration of the Schneiderian membrane or petechiæ were observed. On various parts of the body there were remarked numerous circular patches of various sizes—from that of a shilling to a five-shilling piece—the largest being on the right parotideal region. These patches were well-defined, the hair being abruptly raised around their margin, and looking darker there than elsewhere, the circumference itself being more elevated than the centre, evidently from subcutaneous infiltration. The general appearance of these patches was not unlike that of commencing *Tinea tonsurans*. Temperature 102·1°; pulse 44.

23rd.—A large swelling appeared on the right side of the neck, a little below the larynx, and immediately behind the trachea, in the jugular furrow. Next day the tumefaction in the neck had increased in size and density, and the nasal discharge was more profuse. The exanthem was also more general over the body. On the 25th the horse suddenly became very uneasy in the morning—pawing and looking anxious, respiration and pulse increased, though the temperature was the same. The uneasiness was relieved by an opiate, but in the evening the

temperature was 102·2°, and pulse 52. Next morning the more urgent symptoms had somewhat abated, and the horse was tranquil. On the 28th the acutneous eruption began to disappear, and the temperature and pulse were normal. Not until July 3rd did the abscess in the neck spontaneously open, when a large quantity of pus was evacuated. Recovery then rapidly set in, and on July 12th the horse was discharged for training.

In this case the microscopical examination was chiefly remarkable for its negative results. Sections were carried from the swellings into the surrounding unaffected portions of the skin, but no marked line separated the one area from the other, as an examination of the patch before it was excised, had led me to expect. The only change found was a very slight infiltration of colourless blood-cells between the bundles of connective tissue, and at some parts around the blood-vessels.

The exudation which had produced the patches had therefore consisted in great part of the unformed element of the blood, and it may be inferred that the blood-vessels had sustained at these parts some injury, or were subjected to some pressure, which weakened their walls to an extent that, whilst it permitted an escape of serous fluid, was not sufficient to allow the escape of the formed elements.

The erysipelatous inflammation and secondary abscesses about the head suggest a kind of blood-poisoning as the immediate cause, the morbid matter attacking the blood-vessels at certain points. The name "Erythema circumscriptum" has been suggested by Mr. Fleming, and from the pathological standpoint does not seem to me to be liable to any serious objection.

Eczema.

A disease termed by veterinary surgeons "Eczema" has been lately prevalent amongst horses. Mr. Fleming gives me the following note on the subject:—

III.—*So-called Eczema in the Horse.*

Mr. Fleming states "that it is a very common disease of the horse's skin, especially in summer, in hot climates. Often accompanied by intense itching—there is always shedding of hair on the affected patches, with an exudation of pus and serum,

which forms crusts. Some horses are liable to the disease for years. Remedial agents have only a temporary effect. It sometimes leads to hypertrophy of the cutis, with corrugation where the panniculus carnosus muscle is thickest."

The specimen I examined was excised from a trooper in Dublin, at the instance of Mr. Collins, the head of the Veterinary Department in Her Majesty's Service. The following notes of the case have been kindly supplied by Mr. A. J. Owles, Inspecting Army Veterinary Surgeon.

The animal from which the piece of skin was taken has been twice under treatment for "Eczema," and it was during the second period that the morbid specimen was obtained, when the disease was in a somewhat chronic stage. The first admission was on 7th September, 1877; discharged "cured," as we thought, 22nd November, and re-admitted 2nd January, 1878. The disease first appeared in the form of vesicles, about the size of small peas, on different parts of the body, attended with great itching.

The vesicles burst and exuded a pale straw-coloured fluid, which dried and formed a crust on the surface. The hair was either rubbed off the affected parts or it became detached without friction and fell off. When the hair was clipped over the affected parts, small bare spots were visible at the seat of former vesicles.

In the chronic stage vesicles were not found in the portion of skin longest affected, but raw-looking spots, or spots covered by a thin brownish crust had taken their place, producing an appearance somewhat similar to that of a chin which had been "rasped" in shaving. The skin becomes harsh and thickened; in several cases it became almost corrugated. The portion sent was in the chronic thickened stage to some extent.

The appearances found on microscopical investigation, were not those which are described as being characteristic of Eczema in the human subject. These are stated to consist of serous infiltration of the cutis, swollen connective tissue-bundles in the corium, enlargement of the papillæ, cell-infiltration between the bundles, a swollen condition of the cells of the rete mucosum, and a cellular infiltration between these latter. In the skin from this horse I found the morbid appearances limited to the

hair-follicles, sebaceous glands, and the portions of the epidermis adjacent to the opening of the hair-follicles. The hairs were absent from a large number of the follicles. In some follicles the hair was intact in the deeper part of the follicle, and tapered to a thin point before its exit from the cutis. In some sebaceous glands the secreting cells had become agglutinated in a honeycombed mass, near the point where the sebum is discharged into the follicle, and in one specimen there was some breaking down and disintegration of the cells of the root-sheaths at this point Near the hairs, cavities filled with cellular elements and *débris* had formed between the rete mucosum and the horny layer, Their contents were definitely bounded by the epidermic cells. and stained deeply by logwood. I had observed similar cavities in the epidermis and external root-sheath in Tinea tonsurans, and the condition is not confined to any special disease, but is found in different affections attended by irritation of the rete mucosum. They might be described as minute abscesses in the rete mucosum. The cells of the rete were not swollen, and there was no cellular infiltration of the epidermis, such as that described by Biesiadecki in Eczema in man.

Cell-infiltration in the cutis (although to a very moderate extent) was observed in the papillary layer, and was more marked at some parts than at others. There were no appearances which could be interpreted as signifying that there had been swelling of the bundles of connective tissue.

The affection must, I think, be considered as one of the epithelial elements of the hairs and sebaceous glands. The evidences of peri-follicular inflammation are not sufficient to warrant the supposition that the disease is identical in its nature with the Acne of man.

The minute swellings in the epidermis are sufficient to account for the itching which is a prominent symptom of the disease, and which has, perhaps more than anything else, led to its being considered eczematous.

STOMATITIS AND HORSE-POX.

BY ALFRED BROAD, F.R.C.V.S., ST. JOHN'S WOOD, LONDON.

Stomatitis.

WHILE it is a fact that at some seasons one disease will more or less extensively prevail, justifying the application of the term "epizoötic," or it may be "enzoötic," it is just as noticeable that at other times it is not one definite malady which afflicts our patients, but a special type or character of symptoms, which, from atmospheric, miasmatic, or other occult influences, appears in connection with ordinary complaints, or is the sequel of ordinary causes of illness.

During the past few weeks Stomatitis has been a marked feature in many cases under my observation, the buccal membrane being affected with follicular inflammation over a greater or less extent of surface, the epithelial layer being readily detached or abraded, exposing patches of ulceration; the mucous membrane around the frænum and upon the sides of the tongue has generally been attacked, and occasionally that covering the maxillæ. Soreness of throat or pharynx has usually been a concurrent symptom, with, in some cases, a profuse flow of saliva; dysphagia has also existed, from the severity of pharyngeal inflammation.

In two cases a slight eruption occurred upon the outside of the lips and muzzle, while in another the tendency to affection of the oral region was evinced by the formation of a large inflammatory swelling of the upper lip, resulting in an abscess which pointed externally.

The case I wish to record more particularly, I have selected as an instance of a pustular form of Stomatitis which I have not found so common. The subject of the affection was a well-bred bay gelding, six years old, sixteen hands high; it was bought at a repository on August 7th last, and on arrival at the stable of its purchaser, was noticed to be ailing. My attention was called to it on the 8th, when I noted the following symptoms:—Extreme dejection; external temperature low, internal 103°; pulse 56; conjunctivæ most intensely inflamed, and deeply tinged with

yellow, slight muco-purulent discharge from them ; scanty nasal discharge, giving an adhesive feeling to the nostrils ; Schneiderian membrane injected ; submaxillary glands swollen.

On separating the lips, a quantity of viscid saliva flowed from the mouth, and then the more uncommon features of the case were apparent ; the buccal membrane was inflamed, appeared of a deep red colour, and was studded with pustular ulcers, both along the gums and upon the inside of the upper and under lips, also upon the sides of the tongue. In the latter situation the ulceration was confluent, covering large patches ; but upon the gums and lips the ulcers were discrete, those upon the gums especially being circular, and evidently resulting from the rupture of pustules—the diameter of the majority was a quarter of an inch, their margin was elevated, and the exposed submucous tissue was of a yellow colour and thickened.

Dysphagia was intense, attempts to swallow hay almost producing suffocation, while neither medicine nor liquid food could be administered, and as the disease advanced, the pharyngeal thickening of membrane became so great, that respiration was a matter of difficulty, and was accompanied by a loud roaring.

For two or three days the patient suffered severely, the ulcers presented an unhealthy appearance, the pulse ranged to 70, and suffocation at times seemed imminent ; then improvement and a gradual progress towards recovery commenced, a free discharge issued per nares, while the ulcers slowly healed, the borders sinking by absorption, and the centre assuming a healthy granulation tint. The duration of the malady was about three weeks.

The remedial measures employed embraced gargles, steam inhalation, repeated blisters to throat and submaxillary space, and administration of nitrate and chlorate of potass, the latter being especially useful in this disorder, given in two-drachm doses two or three times daily in the drinking-water.

Horse-Pox.

The following case I believe to have been equine Variola, which may be of more frequent occurrence than the extreme rarity with which it has been mentioned would lead us to infer.

June 23rd, 1878.—A brown carriage-horse. Symptoms: numerous deep circular ulcers with sharp margins situated along the sides of the sheath, and upon the thin skin of the groin and thighs, as many as three to the square inch; appetite impaired; pulse 48. After a few days a large sore appeared in the near hind heel, accompanied with much swelling and pain, and forming a dark crustation upon its surface. A weak lotion of sulphate of zinc was applied, and the symptoms amended, the sore slowly healing. The same lotion was applied to the ulcers in the groin, and sulphide of calcium was administered twice daily in half-drachm doses. No crusts were observed upon the smaller ulcers, doubtless on account of the fomentation employed before the nature of the case was suspected; no alterations appeared in the mouth. The whole duration of the case was a month.

NOTES ON THE DENTITION OF THE CAMEL.

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I HAVE not, so far, been able to ascertain definitely the course of dentition in very young animals; but have succeeded in obtaining correct data to guide selection from two years and upwards, which will prove for all practical purposes sufficient—the youngest age at which camels ought to be taken for the service being six years.

Leaving out of consideration the molars or back teeth, which have but little interest with regard to the judging of age, the camel of full age has in the lower jaw six incisors, or front teeth, and two tushes, or canine teeth, occupying the usual position, as in the horse, etc., immediately posterior to the third pair, or corner, incisors or nippers. As in the cow, etc., there are no incisors in the top jaw, their place being occupied by a tough pad; but there is a well-developed canine tooth corresponding with that in the lower jaw on either side, and in addition two smaller teeth of the same description (one anterior and one posterior to each of those already described), and which, for the sake of easy description, I will designate the secondary canine teeth; the

central ones and those in the lower jaw being called the principal. The full mouth of teeth, therefore, consists of six incisors and two canine teeth in the lower jaw, and six canine teeth in the upper.

As in other animals, there are two distinct sets of teeth—the milk teeth in the young animal, which are ultimately shed, and replaced by the permanent set. The difference in appearance between these two sets of teeth as to size, shape, etc., is so marked, that the most casual observer may learn to distinguish them after the inspection of a very few mouths.

Starting, then, at two years of age, the animal will be found to have six incisor teeth in front, and one canine tooth on either side in the lower jaw, and one canine tooth on either side in the upper. All these teeth are of the temporary or milk class. The incisors, small, white, chisel-shaped, with sharp edges; the canine teeth, small and pointed, the upper ones especially so.

At three years of age the incisor teeth have become blunt on their edges, the extent of wear decreasing from the centre pair to the corner teeth, of which the cutting surfaces are still tolerably fresh.

At four years of age the incisors are much worn down, fully to half their length ; presenting, instead of the flat, chisel-shape, the appearance of a set of round pegs set wide apart in the jaw, and are much discoloured. This wear increases up till nearly five years of age, when the temporary teeth will be frequently found to be worn quite down to the gums. The mouth at this period might appear to the uninitiated to be that of a very old animal; but the smallness of the remains of the teeth, and more particularly the absence of the powerful tushes seen in the older mouth, will readily mark the difference.

At about five years of age the first permanent incisors are cut, and a series of very marked changes commences in the mouth. Two large, broad, chisel-shaped teeth spring up in the front or centre of the lower jaw, and speedily grow to a considerable length, showing a very marked contrast to the remaining portions of the temporary teeth. The animal is now described in the vernacular as *do uk*, having been previously known as *chatri*.

At about six years of age the second pair of incisors appears,

one tooth on either side of the centre pair, and the camel is known as *chowga*.

At seven years of age the last, or corner, incisors are cut, and the title *chiga* is applied.

Between seven and eight years of age the tushes in the lower jaw are cut, quickly followed by those in the upper. At about eight years old these canine teeth have attained a length bringing them fairly on a level with the incisors, and the latter named are fully up, level with each other, the centre pair showing signs of wear on their cutting surfaces; the second also, but in less degree; the corner pair being quite unworn. The camel is now described as *nesh* or *jewan*, and may be considered in its prime.

The two secondary tushes on each side of the upper jaw are cut after this date; but I have as yet been unable to fix the exact period, and, from a considerable number of observations, I am inclined to think that they are somewhat irregular in their time of appearing.

Increasing age is marked by the wearing down of the incisors, the cutting surfaces becoming more and more blunt, contracted from side to side, and wider from front to back, until, in the very old animal, they become, as in the four-year-old, worn down to mere stumps. The principal pairs of tushes increase gradually in length, and, from holding a position somewhat sloping forward in the mouth, get upright, and, especially in the case of the upper ones, eventually curve backward. In very old animals the tushes are worn by friction against each other. Another description of wear in the incisors is also seen in animals between three and four years of age, and also after eight years of age; that is, when the temporary and permanent teeth are respectively beginning to show wear. There is an indentation of the sides and tops of the teeth, caused possibly by friction in the act of jerking the head, to break off foliage in browsing.

It will be seen that, at one period of the animal's life, namely, from four to five years of age, the mouth is almost devoid of teeth; and from five to quite six years of age, when four teeth are fully established, there must be considerable difficulty in gathering food, this being increased by the tenderness of mouth caused by the cutting of the permanent teeth. It is at this age

when, it may be reasonably argued from our knowledge of other classes of animals, the camel is most subject to disease, and as little fit for physical exertion as at any period of its life, that large numbers are purchased; and I can, from personal observation, vouch for the fact that very many of those which have died were of this class.

MALIGNANT CROWN-SCAB.

BY WM. ASBEY HURRELL, M.R.C.V.S., SOUTH MINSTER, ESSEX.

In August of 1879, the cob in question, belonging to Robert Page, Esq., Down Hall, Bradwell-on-Sea, was first taken with a swelling immediately round the coronary band of all four feet. This swelling was hot and painful to the touch, but no lameness was present, beyond a slight stiffness. Ordered fomentations, cooling lotion to the parts, and gave him a dose of physic, and afterwards alterative medicines. In a few days suppuration set in at various parts of all four coronets, and the wounds soon became confluent and extended all the way round each coronet, the exudation being very fœtid and unhealthy. This suppurating band on each foot was about an inch in width, and presented a very fiery appearance; there was a great amount of irritation, which was evinced by the animal persistently either rubbing or biting them, and which caused them to bleed very much. The disease soon began to extend up his legs at various parts, principally below the fetlocks, although some were up as high as the knees and hocks, and seemed well-defined ulcers, causing much desquamation of the cuticle, and discharging a very unhealthy-looking pus; in about a week from their commencement they would dry up. Poultices were tried, also dressings of Sol. Zinci Chlor. one to twelve, for the removal of the smell, as it was so offensive; gave him Pulv. Arsenic combined with Cupri Sulph. and good food. This treatment had no good effect. I then tried various other remedies—viz., Cupri Sulph. lotion, digestives, astringent lotions and powders, Argent. Nitras. undiluted, Oxide, Carbonate and Sulphate of Zinc, Carbolics; but nothing had the slightest effect on him. If he was kept in a loose-box his legs

would swell very much, and the stench from his coronets was just like a cancerated smell. His health all this time appeared good, appetite good, and he always seemed best when running in a dry pasture. This continued until the end of October, when the coronary band appeared much more swollen, and quite overlapped the top of the hoofs. In the middle of November, the hoofs apparently began to loose their attachment, especially round the heels and frogs. In December they much more detached, and the groom asked me to allow him to try some dressing which some one had given him, and which, I believe, contained nitric acid, verdigris, and treacle. Anyhow, what with that dressing, keeping him well and giving him the Liquor Arsenicalis, the coronets began to lose their stench, and became much drier; so that during the winter, with simply a dressing of tar, he got apparently quite well, and was then turned on to the grass marshes to graze. By the beginning of May, he had cast his old hoofs and appeared progressing; so that he would again be of use. About the middle of June, the man in attendance noticed him purging slightly, but attached no importance to it for a fortnight, at the end of which time he found he had wasted very much. He then had him brought to a loose-box, and then came for assistance. On examination I found he was miserably thin and wasted, an eruption nearly all over him. His fæces were almost as thin as water, very offensive, and covered with air-bubbles; pulse 60, and weak; respiration normal; mucous membranes of mouth and conjunctiva very pale and yellow; there was also a slight disposition to break out round the top of each of his hoofs. Gave him Ol. Lini, Tr. Opii *cum* Hg. Cl. 3 gs., and followed this up with the usual astringent medicine. Allowed him gruel to drink, instead of water, as he was extremely thirsty, and any kind of dry food he fancied, oat and bean sheaves, oil-cake, white peas, old hay, etc., his appetite being very capricious, and he ate very little. As he appeared to get no better, except in the eruption, we gave him the Nitro-Muriate of Iron. Afterwards we tried Plumbi Acet. and Tannic Acid āā℥j per dose night and morning in milk, but with no good result. He daily became more emaciated, and by the end of July he was a "walking skeleton." His coronets were nearly as bad as when

first attacked, and his lips were much swollen and cracked; they emitted the same cancerous smell, and had nearly the same appearance as his coronets. So we persuaded the owner to have him destroyed on August 14th, and the autopsy revealed the following alterations:—On opening the abdomen, the bowels appeared very pale in colour, and there were petechial spots and patches on various parts. The mucous membrane of the stomach appeared much thicker and corrugated, and the villous portion seemed almost destroyed, the change in colour between the villous and cuticular portions being almost imperceptible. The food in the stomach was almost of a fluid description, and in all the bowels quite so. The lining membrane along the track of all the small bowels was much thickened, and the calibre of the bowel very much smaller than normal, and in the large bowels this membrane was thrown up into dense rolls, and very much puckered; spleen healthy; liver apparently healthy, with the exception of the coats and the bile ducts, which were much thickened; kidneys healthy; heart normal in size, very pale in colour, firm to the touch, and structure not easily broken down; mesenteric glands and lacteals much enlarged, especially along the broad band of the double colon; lungs healthy, with the exception of being slightly nodulated or thickened at parts on their surface; discharge from nostrils of a purulent character, and the Schneiderian membrane of a dull leaden hue—almost black in places, but no signs of ulcers; no accumulation of pus in the sinuses of the head; blood very frothy, thin, and very slowly coagulated; examined microscopically, the corpuscles immediately ran together, forming *rouleaux*, and soon afterwards many of them became stellate.

In the above autopsy I was rather disappointed, as I quite expected to have found something rather more definite, in the form of a cancerous tumour affecting the bowels; but I consider it a decided case of blood-poisoning.

I forgot to say that his submaxillary glands were much enlarged, but did not suppurate.

Is this in any way related to Farcy or Glanders?

[We know nothing of the pathology of "Malignant Crown-Scab," never having to our knowledge seen any malady which

received that name, though we are aware that in very ancient books on farriery such a malady is described. The disease had no relation to Glanders, in our opinion, but was in all probability Lymphæmia and Lymphadenoma—at least, the condition of the mesenteric and other lymphatic glands, lungs, etc., as well as the constitutional symptoms exhibited before death, would lead to this supposition.]

NOTES ON NATURA VERA OF BURSATTI AND "CANKER."

BY RICHARD W. BURKE, THIRD YEAR STUDENT, DICK VETERINARY COLLEGE, EDINBURGH.

I.—BURSATTI.

History.—One would imagine that comprehensive works on the nature and treatment of this disease—one which has probably done more injury to horse-owners in India than any other which equine flesh is heir to—would be prolific, and that a subject of such engrossing interest to the Government would be taken in hand by a body of veterinary surgeons appointed by it, who would regard it in a scientific light and through the medium of scientific paraphernalia. Far from this being the case, the paucity of articles on the subject would surprise any one acquainted with the widespread nature of the disease. I believe the sum total of the literature of Bursatti is comprised in a few meagre articles written by different veterinary surgeons at intervals "few and far between," and to be found in the pages of our journals and perhaps a few "happy thoughts" and other "bright ideas" scattered through the columns of Indian periodicals. This state of affairs has, of course, brought about its natural results; the absurd attempts made to explain the nature of the disease being often so grotesquely humorous, that, were not the contrary evident from the almost painful earnestness of the context, the reader would give the writer credit for being a small kind of wag, and the diversity of opinions as to the treatment of it being as numerous as the languages spoken under the shadow of the Tower of Babel. Out of the very many examples at my command, I shall content myself with merely mentioning the following one:

A veterinary surgeon of great experience gives it as his opinion that the disease is present in the blood as a *humour*, which first appears in the form of Farcy buds, and, to prove its analogy to it, he reminds you of the fact of Farcy being also due to a "humour" in the blood! This style of logic, in which two premises keep "throwing the ball," as it were, to each other, and this novel form of deduction, which is strongly suggestive of the question once put to his class by a renowned Grecian philosopher when he puzzled them by asking, "Which was first created, the hen or the egg?" is brought forward by this learned gentleman to contravert the then general belief that Bursatti was merely the Syphilis of the horse.

Time and space, or both, are too valuable to make comment on other like productions on this occasion.

Of the best *practical* accounts of the disease hitherto given, the first in merit are those by Messrs. Oliphant and Meyrick; the next, by Mr. F. Smith. All the others I have seen are useless and misleading.

To Mr. F. F. Collins, of Indian renown, is due the credit of having been the *first* to suggest that the disease was probably *parasitic* in its origin. If this theory be true, the *domestic fly* may be considered in the light of an intermediate "host" or "bearer" in the production of the disease. But Mr. Collins, and after him Mr. Smith, would have us believe that it is in no case to be ascribed to the *fly*, but that the only medium of transmission is *water*. With all due deference to their opinion, I must observe, that, on the hypothesis of the disease being truly parasitic, it is far more probable, and this for many reasons, to suppose that *flies* act as readier mediate means of conveying the parasites than *water*. It is nothing very surprising to think that flies carry on them certain vegetable forms, and germinate these on suitable soils. Thus several varieties of flies to be found in the West Indies have been noticed to possess vegetable growths projecting from them. Professor Balfour describes the *Sporendonema muscæ* as a vegetable form which grows on the body of a fly in the tropics; several other forms have been noticed on the bodies of flies in Australia; and, under the heading "Disease due to Fungi," in the VETERINARY JOURNAL for February, 1880, it is

stated "that the common house-fly is often killed by a *fungus;* that this fungus acts as well as yeast for baking and brewing purposes." In like manner, therefore, it might rightly have been supposed, *in the absence of our present knowledge,* that the flies about India were infected with the spores of some peculiar fungus, and that these were deposited by them in the skin of the horse, giving rise to the destructive changes of the disease. Following this out, I purposed to get to the root of the notion, and to see how far it would hold gold. During the first summer session (1878) in Dr. Cunningham's class of Practical Histology, I sectioned and "mounted" several specimens from the sores and lungs of an animal th subject of the disease. On examining these under a one-fourth objective, I could then make nothing of them; but in the following holidays I found the disease to be *Cancroid epithelioma,* and this has since been verified by me by the use of higher powers.

On the subject being mentioned to Mr. George Kettlewell, Senior Veterinary Surgeon of the Saharunpore Government stud and a recognized specialist at the microscope, he said he was in perfect agreement with the results of my investigation, and that in his search into the microscopic characters of the disease, made some twelve years or more ago, he also considered it to be Epithelial Cancer.

Having once arrived at the *true nature* of the disease, the part played by *flies* in the production of it became very readily apparent to me. It is allowed that when any irritant is applied to the tissues an abnormal process is set up. But all irritants, we know, do not occasion like results, the character of the future product being always determined by the nature of the irritant applied. Thus, for example, the bite of certain snakes may be so intensely poisonous as to occasion almost instantaneous death of the entire organism of the animal bitten; that of another, being of a degree lower in kind, may occasion an inflammation so acute and rapid as to lead to gangrene of the part bitten, but not *general* death; whilst, thirdly, the irritation of a short hot pipe, still less active in its operation, leads to cancer of the lips and tongue. Why cannot, therefore, the irritation produced by the *sting* of a fly occasion similar results to that of a

hot pipe in the case of a smoker; or, again, of soot in the case of a chimney-sweeper? The mode of its action, or the *theory of assimilation* (as applied to the spread of the sores) dependent upon such action, will be explained by me at considerable length at a future period.

Definition of Bursatti.—It may be defined to be a non-enthetic (non-specific), malignant, recurrent disease, having an extraneous origin, and being characterised by a passive, non-inflammatory, slow, and insidious course throughout. Its mode of invasion is more the result of self-multiplication and neighbouring *assimilation* than of any active surrounding inflammatory *degeneration.*

Etiology.—The theory that the primary (local) manifestation of the disease was merely the *partial result* of a *diffused hidden cause,* "the outward and visible sign of a tension to which it gave partial vent," no longer bears the test of clinical observation. Writers on human cancer also state that the amended theory of cancer recognises no cancerous cachexy, no cancerous tension, except such general ill-health as gradually supervenes on the progress of cancer.

I have had sufficient experience of Bursatti to say that it is the ultimate *cause* of blood-poisoning, and not the *result* of such; the secondary cachexia being the completion of progressive contamination from the one first established focus of disease, *extrinsecus.* The several evidences in proof of this assertion will receive publication at a future date.

The recurrent nature of the disease.—It is asked why the disease, if it were not *constitutional,* should be *recurrent* in its nature? This is easily explained by the fact that either owing to a neglect in early removal, or from insufficient removal of the cancerous cells from around a part, the disease, though having escaped attention for a temporary period, reappears *in loco*—with equal virulence if in the latter case, or even pronounced if in connection with the former; because—

(1.) In the one case the cancer-cells from the original part have been allowed time to be carried to the system by the lymphatics and veins, being cast into the lymph and blood-circulation, and becoming impacted as emboli in the smaller vessels, producing diffused new centres of infection, until cachexia is established,

when it reappears in its *secondary* condition as an "*eliminative process*," the suffering of the patient being then intensified in proportion to the amount absorbed, and to the extent of recurrence of the disease.

(2.) In the other case, when the disease reappears in the *same* region which it had *originally* occupied, it is due to *improper removal*. "The cancerous infiltration extends to a considerable distance around the tumour into integument, which to the naked eye appears quite healthy, but with the microscope will afford unequivocal evidence of the existence of 'cancer-germs' diffused through it. The cancer-infiltration extends like a halo around the original tumour, and very probably shades off into the surrounding textures. It is of great importance in determining the question of operation to bear this in mind, and not to act on the supposition of the tumour being distinctly and abruptly defined" (Erichsen).

It may be argued that the recurrence of the disease is simply a proof of the return of the *blood* to a diseased condition; but it is as difficult to explain the quiescence of the blood during this long time as of the cancer-cells externally.

"Dr. Hughes Bennett, many years ago, called attention to the fact that the microscope showed disease in tissues apparently healthy when in close proximity to diseased organs; and the late Mr. Charles Moore, F.R.S., directed attention especially to the mischief of inadequate operations in cases of cancer. To do your patient justice, you must remove the entire disease in all cases, with all skin which may be least implicated so as to have lost its healthy softness, any of the other structures involved, and any glands which may be enlarged" (*Medical Times and Gazette*).

When the disease recurs in seats other than the primary, it must then, and then only, be considered as an "*eliminative process*," consequent on systemic infection having been established.

I have occupied so much space in connection with the tendency to recurrence by the disease, because on the first occasion of the subject of Bursatti being read in this country at the London Veterinary Medical Association, Professor Morton, in the chair, the *cause* of the *recurrence* of the disease puzzled all the members present, and it was then agreed by them that

because the disease was recurrent, it was therefore, *ab initio, constitutional* in its nature.

If the disease become chronic, its potency seems modified during the winter, only to reappear, however, with augmented powers of destruction in the succeeding summer. This I attribute to the general improvement of the animal's system consequent on the approach of a vitally rich atmosphere, and to the vital force thereby maintained in that system during such weather.

When the diseased parts are thoroughly removed, the wounds which result readily heal at all periods of the year; if on the contrary, the edges close in, leaving one or more fistulous openings from which there is a constant discharge established, which lasts throughout the colder season of the year in very many cases.

Kunkurs.—Those acquainted with the literature of Bursatti are already aware of the existence of these bodies in connection with that disease. Their presence constitutes the specific character of both Bursatti and Canker in the feet of horses, though less often detectable in the latter.

What is a kunkur? It is *the ultimate result (product) of an augmented endogenous cell-growth in a part the seat of an applied stimulus of a peculiar degree;* the stimulus in the case of Bursatti being afforded by the sting of a fly, similar to that afforded by a hot pipe and soot in the case of cancer occurring in the human subject, or to that occasioned by pricks from nails and by dirt in the foot of the horse, in the formation of "canker." And I venture to define this peculiar degree as being something below that producing true inflammation, yet resistent and continued in its action.

A section of an *embryonic kunkur* presents *sub-* or *endo-kunkurs*, imbedded in an immensely-condensed hyaline or slightly fibrillated matrix.

To acquire an intimate knowledge of the *nature* of "kunkur," it is necessary that its section be examined in connection with the parent section. Those desirous of observing one will find a good engraving of it in Green's "Morbid Pathology," page 193, and several others of lesser interest on page 194. These represent

but an incomplete stage of their development. It must be borne in mind, however, that we must not expect to find them shown in the matured state to be seen in cancer of the *human* patient. We recognise in the results of clinical experience an "ossific (calcific ?) diathesis" peculiar to the equine tribe, which suffices to explain to us the ready and abundant deposition of calcareous matter taking place in newly-forming structures, etc.. This accounts for the "human" surgeon being ignorant of the existence of such a thing as "*kunkur*" in connection with the cancerous sores of *his* patient.

Chemistry of kunkur.—"1. A kunkur when heated on platinum foil fuses to almost an insignificant quantity of ash.

"2. It is calculated to contain about 90 per cent. of organic to about 10 per cent. of inorganic matter.

"3. The ash, when tested, shows presence of phosphoric acid and lime (phosphates of lime)"—(Shearer).

The *carbonate* of lime (C_aCO_3) that must also have formed one of its constituents, has, by heating on platinum foil, been split up into lime (C_aO) and carbonic acid (CO_2).

No other structure in the whole animal frame, save enamel, dentine, and bone being found to contain more than, or as much as, 10 per cent. of inorganic matter, we may safely assume that the kunkers have become the seats of calcareous (inorganic) deposition. "This change reminds us of what takes place in the cacoplastic deposits in the coats of arteries and on serous membranes, constituting what is erroneously called *ossification.* The calcareous conversion of Tubercle and Cancer can be explained only on the supposition that the organic matter is absorbed, and the earthy salt is deposited in its place. This is exactly like what takes place in true petrifaction of organised bodies, the silica or calcareous substance being substituted molecule for molecule ; so that, when all is converted into stone, the shape of the organised body is retained. And we further learn from this that the matter of the tubercles may be absorbed" ("Principles of Medicine," by Dr. C. J. B. Williams).

Theories hitherto advanced regarding the nature of the so-called kunkur of this disease.—From Mr. Smith's communication in the VETERINARY JOURNAL for November and December, 1879, I learn that four theories have been advanced from time to

time by writers to *The Veterinarian.* These, according to him, represent the kunkur as being either—

(1) Bony (Western); (2) Aggregations of Scrofula cells with subsequent calcareous degeneration (Hodgson); (3) Inspissated pus (Phillips); or (4) Substances containing crystals of uric acid and oxalate of lime (Meyrick).

(1.) I cannot say whether Mr. Western, veterinary surgeon, came to this conclusion from any microscopical peculiarity presented by the kunkurs, or whether he, as others have done, attributed to them this character simply from a bony resemblance they possessed in their feel and consistency. Under any circumstance I cannot allow that it is any more than a mere conjecture and quite untenable. I fail to observe under a microscope anything like the establishment in these kunkurs of a Haversian system. A section might possibly mislead one by its resemblance to a central Haversian canal, having around it Haversian osseous lamellæ, with lacunar spaces; but a careful examination under a one-fourth or one-eighth objective at once shows, that what appear as the Haversian lamellæ and lacunar spaces are nothing more than the concentrically-arranged spindle-shaped cells and fibres constituting the true "*concentric-globes*" or "*nests*" which are seen in all cases of epithelial cancer, and of which latter they form a parent character.

The change in the hardest kunkur approaches, at most, to the costal cartilages of an old horse, for example, but does not assume the characters of true bone.

Beside, a kunkur is not nearly so rich as bony matter in its organic constitution, as proved by the percentage shown in Mr. Shearer's examination.

(2.) Mr. Hodgson, veterinary surgeon, is right in the sense that true tubercles and cancer tubercles (kunkurs) do resemble each other in their mode of degeneration, viz., "fatty and calcareous metamorphoses;" and he is wrong only in the sense that they differ in their microscopical characters.

(3.) Mr. Phillips, veterinary surgeon, is wholly wrong in the sense that inspissated puss never shows a solid intercellular substance (Erichsen), and possesses no cancer-cells.

Mr. F. Smith, M.R.C.V.S., writes:—"With regard to the

question of the scrofulous nature of the disease, ... the ***brown cells*** are characteristically different from Scrofula cells, and the nodules are not formed of inspissated puss, as the advocates of the Scrofula theory imagined." But do we then recognise no other distinction between the true tubercular (Scrofula) nodules, and the nodules of simple inspissated puss beyond the presence in the former of Scrofula cells? It may sometimes be difficult to identify what are known as Scrofula cells.

(4.) The words of the author of this theory are:—"Under my microscope, 'kunkur' appears to be formed of cells mixed with *fibrinous* deposits, and *sometimes* crystals *resembling uric acid and oxalate of lime* (the italics are mine)—some portions *looking like* tubercle."

Both in true tubercles and in cancer tubercles (kunkurs) we may find molecules of calcareous matter, of pigment, cholesterine, and other crystals; but at what length do we arrive if we attempt at framing out anything *specific* from these? I doubt their explaining in any way the etiology of this disease; and the crystals, therefore, observed by Mr. Meyrick must be considered accidental, or that they must most probably have been some of the crystals resulting from calcareous deposition.

(5.) Mr. Smith mentions a fifth theory, in connection with which, however, he rightly acknowledges the very untenable position it occupies. This relates to the kunkurs being supposed to be "ova of animal parasites." "We cannot," writes the author, "trace any of the processes of yelk segmentation in them, nor should we expect to find white fibres enclosing *brown cells* surrounded by a capsule in an ovum."

Diagnosis.—The disease has been likened to Struma, Syphilis, Glanders, and other affections; though there are absolutely no reasons whatever in favour of such a comparison, each of the diseases being of a totally diverse nature to the others, and possessing special and peculiar characteristics of its own. I do not see that there is the least analogy between Bursatti and any of the aforesaid maladies. The circumstances attending each case, a prior intimacy with the disease, the period of its occurrence, together with a microscopic examination of the *débris*, and the results of inoculation, will always enable the surgeon to deter-

mine its diagnosis. Indeed, what practitioner is there, in the present advanced stage of the profession, who will attempt to draw such absurd parallels between diseases which are now well known to be so distinct *per se?*

The only disease with which Bursatti may be excusably confounded, *post mortem*, and that when we have not the history of the case, is Lymphadenoma in the horse, more especially if accompanied, as it not unfrequently is, by Melanosis. There are, however, other distinctions, macroscopic and microscopic, which will enable us to differentiate the lesions of Bursatti from those of Lymphadenoma in the majority of cases.

Some maintain that Lymphadenoma is propagable by inoculation, although this has not yet been satisfactorily proved. Bursatti is never so propagable.

Post-mortem Examination.—To enter into the minute description of the *post-mortem* characteristics would occupy much space. I will, therefore, only enumerate the structures in which the presence of kunkurs has been traced—viz., the (1) Lungs; (2) Liver; (3) Spleen; (4) Mesenteric glands (J. Burke); (5) Visceral (mesentery) and parietal peritoneum (J. Burke); (6) Pleura —visceral, mediastinal, and costal; (7) Parotid and inguinal lymphatic glands (J. Meyrick);* (8) Submaxilliary lymphatic glands; (9) Bronchial (J. Burke); (10) Prepectoral group of lymphatics found at the entrance to the thorax (J. Burke); (11) and I have also noticed them in the submucosa of the urethra, occasioning the "squirts," and sometimes even giving rise to retention of urine, during the life of the patient.

The heart has *always* remained structurally normal.

A special and remarkable feature of the disease is that no suppurative changes are observed, *post mortem*, as a rule. And on this important point I find I am supported by the experience of Messrs. Meyrick, Oliphant, and J. Burke.

"In cancer, in but few cases," says Dr. Haldane, "is softening found to have taken place, and when met with it has been rather the result of a process of *sloughing* than of comparatively gradual *inflammatory disintegration*."

* *Vide* report of a *post-mortem* examination of an Arab stallion, office of Commissioner of Horse-breeding Operations in India.

John Hunter says:—"The cancer, although it produces a *secretion*, yet does not produce *puss* till exposed; it does not *suppurate* till inflammation comes on, and even seldom then, for true *suppuration* arises from *inflammation*."

The kunkurs may be intimately adherent to the surrounding lung-tissue, simulating the *post-mortem* manifestation of Lymphadenoma; or they may be in as many places encapsuled, and simulate the characters of Tuberculosis; more often, however, they present the former appearance.

The material of Lymphadenoma is intimately connected with the structure of the organ, never showing a capsule unless it has undergone secondary change; and Professor Walley maintains that it never undergoes calcareous and seldom fatty degeneration, and that it is thus very different from tubercle and cancer.

The process of acute retrogressive changes in Tuberculosis, and the beautifully shown central stars of hyperæmia in lymphadenomatous structure, however, are characters which at once differentiate the two last-named maladies from the one under consideration, Bursatti.

There is one more distinctive character which I think may be a great guide to the surgeon in the *post-mortem* diagnosis, and that is the peculiar *slimy* condition of the products in organs the seat of Lymphadenoma, which is altogether absent in Tuberculosis and Cancer (Bursatti), and indeed peculiarly symptomatic of the first alone. This condition once seen cannot again be mistaken.

II.—Canker in the Feet of Horses.

This is also Cancroid Epithelioma. Results from pricks of nails, irritation by dirt, gravel, etc., and frequently also from Bursatti of the fetlocks, owing to the extension of the disease downwards. I may in future say more on this subject. For the present, the reader may himself weigh my statement by putting it to the test under a microscope, and by making *post-mortem* examinations of animals the subject of this disease. It might, perhaps, be surprising to practitioners in this country, and indeed even to those out in India, where the disease is commoner, to be told that the so-called "*kunkurs*" are also abundantly noticed in sections of the growths from cases of Canker in the feet.

Post-mortem examinations that have been made before me have proved equally convincing as to the cancerous nature of the disease. But only in such as have developed a marked cachexia will characteristic lesions be evinced.

It must be borne in mind that "Epithelioma" is the least malignant of all the cancers; and its systemic invasion, therefore, is correspondingly slow.

"ANTHRAX" IN THE LOGAR VALLEY, NORTHERN AFGHANISTAN.

NOTES BY CHARLES CLAYTON, M.R.C.V.S., ROYAL ARTILLERY, AFGHANISTAN.

As an addition to the already rich history of the disease under consideration, these notes may possess some interest. They are not as complete as I could wish, but in a country like this, and with our limited and incomplete means, it is most difficult to carry out one's views. What follows is relative to an outbreak of the malady among some baggage ponies attached to the transport department of this, the 3rd Division, North Afghanistan, Field Force—transfers from the Cabul force, and received at Charasia, about eight miles from the Sherpur cantonment.

Before going any further, I may remark that during the nineteen months I have passed in Afghanistan, on the march to Kandahar, at Kandahar, on the road to Girisch, and that to Cabul, although I have been in charge, in turn, at various periods, of all the batteries of artillery and transport department, and have occasionally been asked to attend the horses of the irregular cavalry regiments of the force, I have not up to recently seen a single case of "Loodianah" or "Anthrax."

On the 1st July last, I saw the first true case, but then not until two or three of the ponies of the corps had died suddenly. Directly I became assured of the nature of the malady, I lost no time in communicating with the Director-General of transport in Sherpur, with a view of ascertaining when the ponies had been purchased, how long they had been in our possession, whether they had all been picketed in one place, etc., etc. The Brigade-Major of transport kindly provided me with the necessary information,

which was as follows—viz., all the ponies were bought in Cabul three weeks before, and up to the time they were made over to the 3rd Division, on the 23rd June, 1880. They are most of them Turkistanees or Cabulees, excepting one or two, bought from officers; they were all quartered together in cantonments, and no cases or deaths occurred among them since the date of purchase. It is important to note, as remarked by the Brigade-Major, that no cases of "Loodianah" had occured in Sherpur since early spring, and even then only three or four cases were registered; thus making the incubative stage, although not fixed, of some length.

Another point worthy of notice is the success which attended the administration of carbolic acid in the only case treated, and of which more complete details are given below.

Deaths having occurred very suddenly and at rather long intervals, as seen by the dates attached to each case, I resolved, in conjunction with Veterinary Surgeon Goldsmith, A.V.D., who most kindly rendered his services and assisted me to make extensive use of the thermometer, to examine every pony, and exclude from the ranks all those whose temperature was found to be over 101°. This measure was accordingly carried out with as little delay as possible, and I append a synopsis of the result. In most cases the temperature was taken per rectum, in one case per mouth; in eleven cases, as the ponies were very difficult to approach and thermometers not easily procurable, no results were obtained.

In	2	cases	the temperature was	...	96^{0}		
	8	„	„ ranged	between	97^{0}	and	$97\frac{4}{5}^{0}$
	28	„	„	„	98^{0}	„	$98\frac{4}{5}^{0}$
	27	„	„	„	99^{0}	„	$99\frac{4}{5}^{0}$
	59	„	„	„	101^{0}	„	101^{0}
	16	„	„	„	$101\frac{1}{5}^{0}$	„	$101\frac{4}{5}^{0}$
	9	„	„	„	$102\frac{1}{5}^{0}$	„	$102\frac{4}{5}^{0}$
	1	„	„	... ...	103^{0}		
	1	„	„	... ...	$103\frac{2}{5}^{0}$		

Total	151	ponies.
	11	„ not examined.
	162	„ strength of corps.

I have isolated twenty-seven ponies and numbered them carefully on the near fore-foot, the same as troop-horses, to avoid any mistakes or confusion. Will take their temperature day by day, in the morning before 8 a.m., when the division is halted, and in the evening, under other circumstances. Later on, the results of this investigation will be communicated. The eleven ponies whose temperature is over 102° are receiving Ac. Carbol. 3i., mixed with coarse sugar and made into a ball, once daily. To-day, the 23rd July, the medicine was given at 12.30 p.m.

I may remark that all the ponies were not examined the same day. The mares, forty-nine in number, were examined on the 21st, between 5.20 and 6.30 p.m.; the entire ponies on the morning of the 22nd, between 6.10 and 7.30, and from 5.30 to 7 p.m. It was generally found there was a difference of 2°, at least, between the temperature of the ponies taken in the morning and that taken at eventide, at the latter period of the day the thermometer being the highest.

The ponies are standing in the open at the rear of the camp, covered at night with one blanket, and receiving as rations two seers, or about four pounds, of whatever corn is procurable,—in this locality Indian corn; and six seers of *bhoosa*, or chopped wheat-straw—I should say fine straw. They are watered at a running stream twice daily.

About 100 of them are in very fair condition, the rest are low, and are receiving in consequence three-quarter seer of grain extra, on my recommendation. The twenty-seven separated from the others get three seers of grain per diem.

It might be interesting to know that the elevation of the encamping ground, whence I write, and where the animals are, is 6,400 feet above the sea-level; the barometric pressure 23.40; the temperature varying between 55° and 95°—that is to say, 40° in twenty-four hours: a most trying climate for both man and beast.

These statements made, I will proceed to give more complete details of the several cases.

First case that came under my notice occurred, as stated above, on the 1st July. The subject had died suddenly during the night, although nothing unusual had been remarked by the

attendants at the time of evening feed. As soon as I could, about 6 a.m., I made an examination of the body, and found the following lesions—viz., bright yellow effusion into the cellular tissue of the lower half of the neck, around the trachea, œsophagus vessels and nerves of the cervical region, pectoral muscles, and between the fore extremities and trunk. The muscles were pale and flabby. On opening the thorax a large quantity of reddish-yellow fluid escaped, I should think about four gallons. The mediastinum was highly injected; the lungs, of normal size, were of a bright roseate hue and extremely light, the tissue being thoroughly permeated with air. The sub-pleural connective tissue was visibly infiltrated, especially in two or three points on the anterior border of the left lung; the bronchial divisions of all dimensions were surrounded by a circle varying in thickness, of a bright-yellow effusion. The glands at the entrance of the chest were enveloped in a semi-fluid mass of darkish hue; the posterior aorta and œsophagus in their thoracic portion being also surrounded by a mass of the same nature; extravasated blood was present about the centre of the internal face of the right lung. The pericardium, distended by fluid of the same aspect as that found in the chest, was markedly injected; the intra-pericardial connective tissue was the seat of effusion; numerous ecchymotic spots existed on both visceral and parietal layers of the serous membranes, more especially towards the base of the heart. In almost every part of the membrane lining the cavities of the organ, ecchymotic spots were to be seen, varying in size from that of the point of a pin to much more extensive irregular patches, these points being more marked at the summit of the muscular pillars of the left ventricle than in other regions. This last-named cavity contained a clot about one inch in diameter, penetrating the auriculo-ventricular opening; this clot resembled an agate in appearance, being, so far as colour is concerned, of a more or less regularly laminated black, carmine, brown-black, or yellowish-white tubular mass. The muscular tissue of the heart was pale and flaccid. The abdominal cavity contained about six quarts of the same coloured fluid as that found in the other serous cavities. The cellular tissue around the kidneys was extensively infiltrated; the tissue proper

of these organs was discoloured and soft; the sub-lumbar glands were of a dark, blood-stained hue, easily broken up by pressure between the fingers. The spleen was not the seat of any physical change, its volume and slate-coloured capsule being normal, and its external surface smooth. The blood contained in the vessels was tarry, non-coagulated, except as already mentioned in the left ventricle.

The above were the principal lesions I met with.

Immediately on concluding the necroscopical inspection, I and Dr. J. Mullane, Indian Medical Department, attached to the 25th Punjab Native Infantry, examined the blood with the view of ascertaining what changes had taken place; but I deeply regret that on this occasion the imperfect means at our disposal did not allow us to make a thorough examination of it. No bacteriaæ were seen. Nevertheless, from the nature of the lesions, I feel myself justified in stating the disease to be what was known as "Loodianah," but which has at last been recognised as nothing but "Anthrax" or "Charbon."

I impressed upon the authorities the necessity for careful supervision and rigorous application of sanitary measures, the carrying out of which was placed in my hands. A copy of my report to the Major-General commanding the division was forwarded to the principal veterinary surgeon at Simla.

I regret it did not occur to me to inoculate a lamb, but only a short time elapsed before another case was reported. This second case occurred on the 10th July, and is worthy of record, as an example of the effects of carbolic acid in comparatively large doses, considering the size of the patient—a pony about seven years old and twelve hands three inches in height.

On the 10th July, at 6.45 a.m., the hour of my morning visit to the ponies, I found the subject of this communication already isolated, and presenting the following symptoms—viz., general appearance very dejected; near fore-leg carried to the front, and slightly œdematous, an extensive enlargement occupying the parts around the scapulo-humeral articulation, lower part of near side of the neck, and between the fore-legs, very hot and painful to the touch, and pitting on pressure. The mouth was hot and clammy; the visible mucous membranes highly

injected; temperature per rectum 104°; pulse 65 per minute, weak, nearly dichrotonous; respirations regular, 18 per minute; no urine or fæces had been voided; great thirst was present. When the head was taken between the hands, the patient threw the whole of his weight on to them; great prostration and loss of strength were manifest, the slightest push being sufficient to make the animal totter. On inquiry I found that the animal had been well, and feeding at 7.30 p.m. the evening before, or when the ponies were left for the night. I immediately administered Ac. Carbol. ℥ij. Ol. Com. Oj., and at 9.20 paid a second visit, in company with Mr. Goldsmith, and found the temperature 104$\frac{1}{5}$°, pulse 68, respirations 36, with visible increase of swelling.

At 9.35 a.m. I proceeded to obtain some blood wherewith to inoculate a lamb kindly placed at my disposal by Capt. Rind, chief commissariat officer. At the same time Mr. Goldsmith examined the blood by means of another Government microscope, different from the one I used before, and at once found bacilli present. The lamb was inoculated by means of a small lancet on the inside of both thighs; but before I proceed further, I may as well state without any result, owing, I now believe, to the insufficient quantity introduced into the economy, or to the absence of bacilli in the same fluid, as we did not find them in every preparation made. At 12 a.m. on the same date, the dose of acid was repeated in the form of a bolus, and associated with fine flour and coarse sugar.

To save space and repetition, the following table will suffice to show at the different times the temperature, respirations, pulse, and quantity and description of medicine administered.

Date.	Hour.	Temp.	Pulse.	Respiration	Nature and quantity of medicine administered.	
10th July	5.30 p.m.	104°	62 p.min.	24 p.min.	Ac. Carb. ℥ij. in ball	During the whole of this time thirst was very great, appetite exceedingly capricious. Great attention, as far as was possible, was paid to the diet.
11th „	6.30 a.m.	103°	62 „	24 „	„ „	
	4.30 p.m.	104$\frac{1}{5}$°	62 „	24 „	Potass Nit. ℥iv. in gruel	
12th „	6.30 a.m.	103$\frac{4}{5}$°	68 „	37 „	Ac. Carb. ℥ij. Ol. Oss.	
	5 p.m.	102$\frac{2}{5}$°	not taken	not taken	„ in ball	
13th „	6 a.m.	102$\frac{1}{5}$°	60 p.min.	34 p.min.	„ „	
	5.30 p.m.	102$\frac{1}{5}$°	60 „	48 „	No medicine	
14th „	7 a.m.	101$\frac{1}{5}$°	60 „	48 „	Ac. Carb. ℥ij. in ball	
	6.10 p.m.	101°	54 „	40 „	„ „	
15th „	6.40 a.m.	100°	42 „	22 „	Aq. Pur. Oj. / Ammon Carb. ℥i. / Nit. in water } Potass	

From the last date up to the 24th, the date of writing this article, the patient has continued to improve in every way, and is now convalescent, taking a little exercise at his own pace twice daily, in the cool of the morning and evening; his condition is fair.

During the time this animal was being treated, another succumbed during the night of the 12th, the autopsy being made about 6 a.m. the following morning. Information proved that the subject—a black pony mare, rising seven years, and in fair condition—had eaten all her corn ration in the evening, after appearing perfectly well during the day up to 8 p.m., when the off hind-leg became the seat of a rapidly increasing œdema. Death ensued shortly after.

(To be continued.)

Editorial.

PROTECTIVE INOCULATION FOR CONTAGIOUS MALADIES.

THE recent advances in pathology, and especially in the etiology of contagious maladies, promise to lead to valuable results in preventing the development of these harassing and destructive scourges among animals. The protective value of inoculation for human Small-pox has been known to Eastern nations from the earliest times, and especially to the Chinese; but then this inoculation only modified the effects of the disease, by inducing it under what were considered favourable circumstances, for the malady was still quite as formidable, so far as its contagiousness was concerned, and therefore quite as dangerous to the communities among whom this inoculation was practised. So that the deadliness of the scourge was only mitigated—the disorder itself was not abolished. The same mitigation occurs on the Continent of Europe, where this protective inoculation is resorted to in the case of Sheep-pox. The percentage of deaths is less than with the naturally induced disease; but then the contagion is kept alive in these countries, and the disorder is ever ready to break out with all its destructive virulence, and to extend far and wide; whereas by energetically enforced police measures it could be entirely extinguished, and those kingdoms freed for always from what is now an ever-present danger.

The introduction of vaccination by Jenner was a great step in advance, so far as human variola was concerned; inasmuch as it demonstrated that the virus of a similar disease in a different species of animal, gave protection from variola, through inducing only a local eruption at the seat

of inoculation, and possessing no infectious properties. It is somewhat curious that vaccination has been of but little value in protecting animals from their variolæ.

Willems' discovery of protective inoculation for bovine zymotic Pleuro-pneumonia, has undoubtedly conferred a great boon; and though its advantages have been denied in some quarters—on very insufficient grounds, it appears to us—yet the evidences in its favour, when the operation has been as skilfully and carefully performed as human vaccination, cannot be ignored. To assert that because this inoculation does not in every instance produce the lung lesions, it cannot afford protection against the disease, is as silly and contrary to fact as it would be to say that because vaccination does not produce a general eruption and all the other characteristics of Small-pox, it will not avert that malady.

The next most important discovery made in this direction is that by Pasteur, who, by a procedure which he has not yet made public, is able to modify the virus of that most fatal disease known as "Fowl Cholera" in such a way, that when inoculated birds are proof against the deadly pest.

Inspired by the results of Chauveau's experiments, as well as by the success of Pasteur, our esteemed friend and colleague, Professor Toussaint, of the Toulouse Veterinary School, has found a similar antidote, or rather prophylactic, for Anthrax, which bids fair to become an invaluable preservative from that widespread and most serious disorder. The manner in which he shields the organism from attack was described by him in the last number of the VETERINARY JOURNAL; and so highly is his discovery already estimated in France, that he has been handsomely rewarded by the Government, while one of the most valuable prizes in the gift of the Academy of Sciences has been conferred on him. He is now engaged in inoculating great numbers of sheep, in a district where Anthrax is always more or less destructive, and he is confident of success. His manner of inoculating, it will be seen, is simple, safe, and easily practised, and the crucial experiments to which his method has been already subjected are an almost sufficient guarantee as to its effectiveness.

Toussaint's great discovery allows us to hope that other diseases of the anthrax or anthracoid class may be rendered harmless by the same or an analogous method of inoculation; and we would especially direct the attention of our colleagues who have the opportunity, to test his method—especially in such terribly destructive disorders as the Horse-sickness of Zululand and the Loodiana disease of India. Swine-plague and some other equally fatal maladies may be brought by this means into the same category of preventible, if incurable pests; indeed, this innocuous preventive inoculation opens up a new era in the history of Sanitary Science and prophylactic medicine. It is no longer a search for cures for diseases whose pathology is hidden in obscurity—the days of the baffled "cure-hunter" are gone by, so far as specific maladies at least are concerned; and the whole tendency of modern medical science is to prevent these, by making a special study of their pathology and discovering upon what their existence depends. In this direction our

Continental colleagues have come well to the front; and while we congratulate them on their brilliant success, we cannot help regretting that in this country we have no share in the good work. There is no encouragement offered, nor, it would appear, is there any desire to emulate those earnest and successful workers in the domain of preventive medicine, whose labours have already been rewarded with such startling results.

"BLACK-QUARTER," "QUARTER-ILL" (*EMPHYSEMA INFECTIOSUM*, GERMAN "RAUSCHKRANKHEIT").*

BY F. HABLE, DISTRICT VETERINARY SURGEON, IRDNING, AUSTRIA.

BLACK-QUARTER is one of the most frequent and fatal diseases occurring to cattle in the Alps. The malady is variously designated, according to the part of the body which is affected. It is characterised by swellings which crepitate when tapped, or when the hand is drawn over them. It is generally divided into two kinds—one in which the swellings are situated immediately under the skin; the other in which the intestines are affected, when symptoms of colic appear, with bloody fæces, and sometimes sanguinolent urine is voided, the swellings being absent altogether, or only appearing shortly before death.

There is rarely a year passes without some cases appearing in almost all seasons; and on some farms the death-rate is very high, reaching to fifty or a hundred head. Scarcely a farm in this district escapes a percentage of deaths among its young stock, the best usually being affected first. So much so is this the case, that the farmers generally breed more animals than they can really afford to keep, because they expect to lose a number of them each year from this disease. Therefore, the annual loss of capital is great. The dead animals cannot be used for trading purposes, for even the hides, after the process of tanning, etc., are so inferior that they do not pay for the labour.

The causes of this malady must be various, and are as yet hidden in obscurity. There can be little doubt that the soil, weather, pastures, season of the year, kind and change of food, and certain plants have some influence; but that the diseased products from an animal attacked with the disease has a dangerous influence upon the healthy cannot, I think, be denied.

There are some pastures in these mountainous districts where young stock (from nine months to two years old) cannot be placed; for if they are, they are certain to become affected with this disease. There are other places, such as stables, pits (lowly-situated dwellings), springs, and swamps, where the carcases of these animals may always be found; such places receive the name of "death-pits" (*Todtengruben*), "black-leg-pits" (*Rauselgrube*), etc.

Cows, full-grown oxen, horses, sheep, and goats may be turned on these pastures with impunity; for it is seldom that such animals succumb to this malady. The causes of the disease are related to the local peculiarities of the fields.

We ought also to mention that the disease occurs on the sunny or southern, as well as on the shady or northern, side of the mountains, in sheltered as well as in exposed and windy spots. Most cases happen in the centrally-situated pastures, few occurring in the highest fields. The disease is most

* Translated from the *Œsterreichische Vierteljahresschrift für Wissenschaftliche Veterinärkunde*, band li., heft 1, by G. A. B.

prevalent in May, June, and also in October, when change of pasture and food usually takes place. During the winter, animals often suffer from want of food, and are poor and emaciated in spring and early part of summer, at which time they are turned on to luxuriant pastures to feed as much as they choose. As a result of this, the blood undergoes a speedy change, a redundance of nutritive material being absorbed. The same occurs when cattle are driven from the sandy, dried-up pastures in summer to the rich grasses and stubble of the cornfields.

It is remarkable, and worth remembering, that animals which are sold and change their abode, or are turned into another district to graze without their dams, become attacked with the disease oftener, and more readily, than when their parents accompany them. More animals are attacked in hot, sultry, dry summers than in cold and wet ones.* There are instances, however, of animals being attacked in the stable, without any appreciable cause being traced. Some persons have accused certain plants of producing this malady; but some of these are harmless and even nutritious, whilst others are refused by most animals.

When once the disease has broken out in a herd, there is no doubt that those affected have a remarkable influence upon the healthy.

The inhabitants of these mountainous districts have some very peculiar customs with regard to the treatment of animals suffering from Black-quarter. They say that when an animal commences to go lame, and crepitating swellings appear on the extremity or other parts of the body, it should be immediately slaughtered at the place where it is found (because they believe the malady is incurable). The carcase is skinned, and the meat which appears healthy (that which is not black) is used for food; whilst the intestines and the diseased parts are thrown into the nearest brook, pit, swamp, or copse, and there left to rot, without even being covered with earth or other material. The skins are usually taken to the homestead and hung up to dry. It sometimes happens that even this decomposed flesh is put into a water vessel to wash out the blood, and afterwards used for human consumption. Animals which are found dead, if not too decomposed, are treated in the same way. The lawful treatment and burial of these animals is rarely carried out.

When we think of this treatment, it is impossible to overlook the mischief that may arise from leaving the blood, intestines, and other parts of the diseased animal about the field, or that arising from throwing carcases into any stream or pond, through polluting the surrounding air and water. Again, when the skins are taken home to dry, it is not impossible that they taint the fodder, litter, etc., and may in this way be the means of producing an outbreak when the animals are brought to the homestead for the winter.

When several animals are attacked at once, or quickly in succession, it is difficult to say whether all the attacks are due to the same local conditions or to contagion. There are many circumstances which would lead us to suppose that the latter played an important part. Where we see the carcases properly and judiciously buried, the sheds, etc., burnt down, stables and the so-called "Black-quarter pits" cleansed, swamps and other suspicious places fenced off—in fact, the ordinary sanitary-police regulations properly executed, we rarely find that the disease disappears, or that the outbreaks are less frequent.

If a contagium actually exists in Black-quarter, and is a cause of its dissemination, it is a fixed one, and is contained in all parts of the diseased body and excretions, and retains its activity—under favourable circumstances—for a long period. Therefore, when skins, etc., are conveyed to the home-

* The past season certainly supports this statement.—TRANSLATOR.

steads, they almost undoubtedly bring the contagion with them. Well-conducted observations and experiments would doubtless throw some light upon this important matter.

We will now consider the symptoms and *post-mortem* changes which occur in most of these cases, although they vary in different animals.

Symptoms.—An apparently healthy animal may be seen away from the rest of the herd refusing to feed, perhaps shivering, and the internal temperature is found to be higher than normal. Soon other symptoms appear, such as the eye staring, the pulse and respiration increase, the animal is disinclined to move, it moans and even bellows, and after a few hours dies, without, perhaps, showing any palpable swelling on the body. This form most resembles Anthrax.

Most animals, however, have, in addition to loss of appetite and shivering, lameness of one or more limbs, rendering movement very difficult and painful. The respirations are strikingly increased—36 to 40 per minute; pulse 100 or more; horns, ears, feet, and surface of body sometimes hot, at other times cold; fæces hard and dry, urine dark red in colour. The limb on which the animal is lame commences to swell, and the swelling quickly spreads to other adjacent parts, and crepitates when the hand is passed over it; the animal lies down and speedily dies, or commences to moan and have convulsions, and perishes in from 12 to 36 hours.

In other cases we find marked symptoms of fever, and small swellings (about the size of an apple) appear on the back, loins, head, or neck; these are at first painful, and they rapidly spread to form extensive enlargements, finally becoming painless, and crepitating on palpation. When the swellings appear in the lumbar region, the urine is usually tinged with blood, and sometimes Hæmaturia is present, and is due to general infection of the blood.

The emphysematous swellings on the different parts of the surface vary in extent, sometimes reaching to one-fifth or one-fourth of the whole body before death occurs. If these enlargements are cut open during life, a dark frothy blood is seen to flow from the wound.

Other animals again, beside having symptoms of fever, expel fæces mingled with blood (Dysentery), or if hard, they are coated with streaks of blood. In these cases the local swellings are frequently absent, or are confined to the lumbar region. This is the intestinal form (*Darmrausch*), and colicky pains are often present before death.

With the foregoing appearances we usually find the visible mucous membranes reddened, an anxious countenance, frequent moaning, and in older animals bellowing; frothing at the mouth, if the swellings are on the head or neck; great prostration, disquietude, shown by frequently lying down and getting up again; when down, the animals usually lie with the head turned back on the shoulder, and the feet close under the abdomen.

Post-mortem appearances.—Abdomen tympanitic; in most cases there is a sanguineous frothy fluid flowing from the nostrils and mouth, the mucous membranes of the nasal and oral chambers are of a blue colour, or speckled with hæmorrhagic spots. When the skin is removed, we find at those places corresponding to the swellings, the subcutaneous tissue infiltrated with a dark-red frothy gelatinous mass; the skin itself, as well as the muscles beneath, are swollen and of a dark-red colour. When the *muscles* are cut with the knife, they crepitate, like cutting a piece of lung. The bundles of muscular fibres are separated, and between them we find spaces (sometimes as large as beans) filled with gas. The *lymphatic glands* of the affected limbs are always swollen, and when cut into appear soft, and surrounded by a bloody gelatinous mass.

When the *abdominal and pleural cavities* are opened, a yellowish, some-

times red-coloured fluid in various quantities escapes. The *lungs* are soft, dark in colour, crepitate when cut, and a large quantity of a dark-red, and generally frothy blood flows from the cut surface. The *pericardial sac* contains a yellow or reddish liquid; the heart is flabby, and its ventricles are filled with dark fluid blood. On the visceral layer of the peri- and endocardium we find hæmorrhagic spots, which extend into the muscular tissue beneath.

The *liver* is congested, yellowish-brown in colour, and has usually undergone fatty degeneration. The *spleen* is in some cases little altered; in others it is enlarged, softened, dark-coloured, and the pulp easily removed from the matrix.

The *kidneys* are either normal in size and colour, or—if Hæmaturia or emphysematous swellings in the lumber region were present during life—are dark red, crepitate when cut, and the connective tissue around them is infiltrated with the gelatinous matter speckled with blood extravasations. The kidneys themselves (generally one only) are enlarged, dark red in colour, softened, and when cut a fine frothy red fluid flows from the surface. The uriniferous tubes are separated from one another by blood and bubbles of gas. The *urine* in the pelvis of the kidney, as well as that in the bladder, is mixed with blood.

The first, second, and third compartments of the *stomach* are usually filled with dry food; the mucous lining is not visibly altered; there are no striking alteration in the abomasum, nor in the intestines when the disease attacks the surface of the body; but in that form which affects the intestines, we find the mucous membrane of the abomasum very much injected and swollen, with blood extravasations into its rugæ. The *small intestines* contain a thin, reddish-coloured fluid mingled with a little ingesta; gas is frequently present, the mucous lining is swollen and reddened in places. The most frequent changes are found in the *large intestines*, which contain soft, bloody ingesta; the mucous membrane is intensely swollen, and dark red in colour, sometimes even approaching to blackness. The *mesenteric glands* are swollen, soft, infiltrated, and studded with hæmorrhagic spots.

Nature.—Black-leg is a blood disease affecting young cattle. It appears suddenly, shows marked febrile symptoms, and runs a quick, generally fatal course. It leads to hæmorrhages and gelatinous exudations in various parts of the body, which are predisposed to rapid decomposition; in consequence of which, gases are generated, infiltrating the tissues, and producing swellings or boils (*Rauschbeulen*) and mortification in various parts and organs of the body. Therefore, Black-leg is closely related to Anthrax, and in many cases it is difficult, and even impossible, to distinguish it from true Anthrax. The characteristic differences can only be detected by the aid of the microscope.

Mortality.—The disease is incurable; and the Germans, when asked about it, reply by saying, "Gegen den Rausch gibts keim kraut" (There is no herb that will cure Black-leg). But this only holds good in the majority of cases; because the treatment adopted is generally commenced too late, for by the time the practitioner arrives the animal is usually dead, or very nearly so; generally more than half the animals are found dead.

It cannot be said that *all* animals affected perish, since, if they are allowed to live, and proper treatment be adopted in time, a certain percentage, say 20, will recover.

Treatment.—The author has successfully treated cases—under favourable circumstances—which already showed extensive swellings on a limb or other part of the body, and some even had dysenteric purging.

The treatment should always commence with venesection. The swellings (boils) must be opened from one extremity to the other, deep incisions being

made into the muscles, and in two or three different places, according to the extent of the swelling ; the blood and yellow exudate should be thoroughly pressed out, and then the wounds washed with weak acid (vinegar.) Internally, the animal should receive diluted acids (Hydrochloric in preference), neutral salts, or carbolic acid, and if nothing else can be obtained, administer sour milk. When dysentery is present, give demulcents and weak acids. When outbreaks of Black-leg are frequent, it is advisable to keep a store of these medicines on the premises.

If Black-leg has broken out in a herd, we must first endeavour to separate the diseased from the healthy, and then perform venesection. Bleeding in these cases is advantageous, and in this respect it differs from most diseases. Put Potass. Nitras. and acids in the drinking-water, and administer a large dose of neutral salts three times a week to each animal whilst danger lasts. Arsenic, either in the solid or liquid form, given in proper doses at intervals of three or four days, is said to be valuable. "Pegging," or the insertion of a piece of *Radix helleborus* into the dewlap, may be of service, and we are even assured that no animal which had been "pegged" ever becomes diseased. All other so-called prophylactic treatment may be looked upon as cruelty to animals.

In order to check as much as possible an outbreak of Black-leg, the following rules should be observed :—

1. Avoid all fields and other places which are known from experience to produce Black-leg in young stock, using them for other animals or older cattle.

2. Suspected watering-places, swamps, and such-like damp situations, where organic substances undergo decomposition in summer, must be thoroughly drained, etc., in order to render them as harmless as possible.

3. Always be careful to change the food gradually. Thus, when young animals are to be changed from succulent to dry food, they should be allowed a small quantity of dry food for a few days whilst they are still in the grass-fields, or they should be driven on to some bare fields, before they are finally removed to the stables. They should be fed regularly, but not over-abundantly, so that they are brought up with a certain amount of stamina. The stable should be as spacious and airy as possible.

4. If an animal becomes ill, or dies, it should be treated with the greatest care. The whole carcase should be buried at once and handled as little as possible. When diseased animals are destroyed, they should never be killed in the stables, but in some isolated spot ; so that all blood and other refuse may be completely cleared away and destroyed, and so prevent them coming in contact with healthy animals. The stable should be thoroughly cleansed and disinfected.

5. With regard to using the flesh of diseased animals for human food, it will be seen from the *post-mortem* changes and the general appearance of the carcase, that it is a very dangerous blood disease, which not only affects certain parts, but the whole body—for the blood circulates through the whole system. Therefore, the consumption of such meat should be strictly forbidden both for mankind and animals, especially as it is impossible to distinguish it with certainty from Anthrax. Although a great quantity of the meat is consumed annually without any manifest ill effects, still we do not think this is due to its innocuousness, but rather to the smoking and cooking processes which it undergoes before being eaten. There can be no doubt that the diseased products are dangerous to life, for persons who have been engaged in working with the dead bodies, have been killed from the poison entering their systems from wounds, etc., on their hands.

HUMAN AND ANIMAL VARIOLÆ: A STUDY IN COMPARATIVE PATHOLOGY.

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(*Continued from p.* 197.)

HORSE-POX.

I HAVE casually and repeatedly alluded to Horse-pox, and it is necessary to again refer to it; as if what transpired at the Vaccination Conference is to be taken as evidence of our state of knowledge with regard to this kind of Variola, we would deserve to be accused of unpardonable ignorance. If for no other object also than to rescue the reputation of Jenner from the charge of error preferred against him in this matter, it would be more than worthy of our attention. It is well known that Jenner expressed himself as of opinion that Cow-pox was derived from horses affected with what was then, and is even now, properly termed "Grease." But for very many years, and also at the recent Conference, it has been denied that there was any relationship between the disease of the horse and Cow-pox; and on the latter occasion it is reported that one of the speakers in remarking that "all who were acquainted with the subject were well aware that there were some erroneous views originally held by Jenner with respect to the conveyance of that particular disease (Cow-pox) from one animal to another—from the horse to the cow, and that it was in consequence of that conveyance that the cow became affected with a disease that he called Cow-pox," added: "In the present day, perhaps, it was unnecessary for him to say that among veterinary surgeons who were acquainted with the lower animals, that opinion had always been negatived. He was of opinion that Jenner saw the disease of the animal, and that it was of a repetitive nature, which by his own observations he was well aware did not possess any particular quality." It is scarcely necessary to remark that intelligent students of veterinary medicine do not negative Jenner's opinion, but know for a well-established fact that he was justified in that opinion; inasmuch as horses suffer from a malady closely resembling the so-called "Grease" (which is simply a kind of catarrhal inflammation of the sebaceous follicles of the skin at the lower part of the limbs), and that this malady is transmissible to the cow and to mankind, producing a train of symptoms so exactly like Vaccinia that no material difference can be discerned between the two maladies.

Jenner was too serious a philosopher and exact observer to make light assertions or superficial examinations, and he only erred when he stated that the one source of Cow-pox, and even of Small-pox, was to be found in the horse. He was absolutely correct as to a particular cutaneous disease of the horses' limbs being transferred, by means of human hands, to the cow's udder, and there producing Cow-pox, which again could be communicated to people and protect them from Small-pox. The facts, accidental and experimental, upon which he based his assertion are unmistakable and indisputable, and the "sore heeels" or "Grease" he describes as affecting horses and infecting the farriers who shod, or the grooms who attended to them, was nothing more or less than "equine Variola" or "Horse-pox," a disease which appears to have been far more frequent then than now, probably owing to the insanitary condition in which horses were kept in those days. Reference to his work* will show that Jenner knew more of the variolous diseases

* "An Inquiry into the Causes and Effects of the Variolæ Vaccinia, a Disease discovered in some of the Western Counties of England, particularly Gloucestershire, and known by the name of Cow-pox." London, 1798.

of animals than many more recent authorities, and that this "sore heel" disorder, or "Grease," was eruptive in character, and could produce Cow-pox. Jenner's discovery—for discovery this really was—was confirmed by Dr. Loy, of Pickering, who, in a little pamphlet which appears to be now quite unknown,* is even much more explicit than Jenner with regard to the nature of this inoculable "Grease," and he resorted to direct experimentation to prove the relations between it and Cow-pox. His earlier experiments failed, in consequence of his not being able to distinguish between the ordinary and the specific malady. At last, he states, he had the good fortune to find a horse on whose heels the matter was much more limpid than in all the preceding ones—on the fourteenth day of the disease, the seventh of the discharge from the heels. Four cows inoculated with this matter showed the usual symptoms of Cow-pox, and a child also inoculated with it on the arm on the third day had a papule surrounded by slight inflammation; on the fourth day the papule was very elevated, and on the fifth day there was a purple-tinted vesicle; on the sixth and seventh days the vesicle had increased and was darker. At the same time there was fever, headache, quickened respiration, frequent pulse, white tongue, etc., which symptoms declined towards the ninth day. On the sixteenth day after inoculation from the horse, the child was inoculated with Small-pox matter without result. Loy alludes also to a farrier and a butcher of Pickering, who, in applying dressings to the heels of a horse affected with "Grease" became inoculated. Desirous of ascertaining whether the pustules which were on the hands and forehead of the butcher could communicate the disease by inoculation, he inserted some of the matter from one of them into the arm of his brother, who had never had Small-pox. The result was exactly the same as inoculating with Cow-pox virus. Loy recognized two kinds of "Grease"—one merely local and non-infective, the other local and constitutional (eruptive), which gives the disease to those who groom or handle the affected horses. With the first kind there was no general disturbance, but with the second at the commencement the horses exhibited symptoms of fever, "from which they were relieved as soon as the disease appeared at the heels, and there was an eruption on the skin. The horse, the matter from which communicated the disease by inoculation, was very unwell until the appearance of sore heels, which was, as in all the other cases, accompanied by an eruption over the greater part of the body." The fact that inoculation from the "constitutional Grease" was a protection from Small-pox, and that the rather severe effects of direct transmission from the horse to the human species were modified by passing the virus through the cow, or through mankind, was fully recognized by this enlightened observer; as well as the other important fact, that the matter was only certainly effective when perfectly limpid, which was in an early stage of the disease. Loy likewise remarked that neither the original nor the communicated disease was infectious through the medium of the atmosphere.

The observations of this contemporary of the illustrious Jenner are extremely interesting, while they are decisive as to the intimate relationship existing between Horse-pox and Cow-pox. Though his pamphlet consists of only a few pages, it contains facts of great moment with regard to our subject, and there is perhaps nothing more astonishing in the whole range of medical literature, and especially that of vaccination, than the oblivion into which the record of his observations immediately fell. The opinion so strongly expressed by Jenner, based as it was on well-observed facts, and the convincing demonstrations (clinical and experimental) of Dr. Loy, do not appear to have availed much in establishing the existence of such a malady

* "Account of some Experiments on the Origin of the Cow-pox." 1802.

as Horse-pox. Very long ago a few experimenters, medical and veterinary (among the latter of whom was Coleman)—in order, I suppose, to test the correctness of Jenner's view—attempted to transmit the "sore heels" or "Grease" to horses and cattle, but failed, as Woodville and Simmons (mentioned by Loy) had previously done, and for the same reason—they inoculated from the local non-constitutional malady, overlooking the distinction which had been so well drawn by the Pickering physician with regard to the simple cutaneous disorder and the specific eruptive one. Consequently, Jenner was set down as having made a mistake; the existence of Horse-pox was denied, and even at the recent Vaccination Conference the same speaker who asserted that veterinary surgeons had always negatived Jenner's opinion, said that Jenner saw the disease of the animal ("Grease"), "and that it was of a repetitive nature [*sic*], which, by his own observations, he was well aware, did not possess any particular quality. . . . . With the exception of the sheep, he knew of no other animal that was affected with Variola. There was an equine Variola which was produced from the cow (?), but he had never seen Variola in the horse. He knew it had been stated of late that cases of that disease had occurred in France, but all he said was that our observations had been extensive and minute, and they had seen nothing approaching to it in a horse or dog, or any other animal except the sheep." Five years before these words were spoken, the Horse-pox had been carefully described in English veterinary literature, and the malady had not only been observed on the Continent, but in England and America, and its existence proved over and over again beyond a doubt.

Dr. Loy's pamphlet was translated into French by Dr. Carro, soon after its appearance in England, and published in the "Bibliothèque Britannique" in the year X. (vol. xxi.). Carro was a great admirer of Jenner, and he dwelt with much force on the clearness and precision of Loy's experiments, as furnishing indubitable proof of the justness of the opinion of the introducer of vaccination. But Carro, in his eulogistic comments on Loy's work, remarks that the French vaccinators had experienced great difficulty in understanding what the English term "grease" really meant, some thinking it was *javart* (fistula of the foot from injury), or *eaux aux jambes* (simple inflammation of the sebaceous follicles—*vulgo*, common "grease")—an uncertainty," adds Carro, "which shows what little care the English have observed in describing the *grease*, and is probably the cause of the small progress this interesting portion of the veterinary art has made among them." The French veterinarians and medical men who tried Loy's experiments had no better success than those in England who did not have recourse to the eruptive disease for inoculating material; consequently, in France, also, Jenner and Loy were believed to be in error, and nothing more was thought of Horse-pox or "constitutional Grease."

But it is curious, in the midst of this incredulity, to find Carro himself adducing most valuable confirmatory proof of the correctness of Jenner and Loy's statements, in a letter addressed to Professor Pictet, of Geneva, in 1803, and published also in the "Bibliothèque Britannique." In this letter Carro writes:—"Les maréchaux-ferrants de Salonique distinguent trois sortes de javart: *l'écrouelleux*, *le phlegmoneux*, *le variolique*. Ce dernier paraît être le même que le *grease* constitutionnel du docteur Loy, car il est accompagné d'une éruption semblable à la petite vérole. Aussi, d'après le rapport des bergers Albanais, les vaches sont elles sujettes dans ce pays à une maladie qui paraît avoir une grande ressemblance avec le Cow-pox des Anglais; et ce que décide le question, c'est que le docteur Lafont, établi depuis longtemps à Salonique, en Macédoine, a réussi à produire la véritable vaccine sur deux enfants inoculés avec le virus pris sur les jambes d'un cheval atteint de cette troisième espèce de javart, quoiqu'il ne produisît

aucun effet sur une vache soumise aussi à cette inoculation ; et cette vaccine s'est propagée de ces enfants à d'autres par l'inoculation, avec ses caractères et sa bénignité ordinaires."

And evidence proving the existence of Horse-pox was cropping up now and again, though it was not readily accessible to the medical world of those days. For instance, in the spring of 1805, Viborg, professor at the Copenhagen Veterinary School, inoculated a cow with matter obtained from the heel of a horse affected with the specific form of so-called "Grease." On the fifth or sixth day on the udder and teats were bright transparent vesicles, with the characteristic areola and umbilicus of Cow-pock ; and the cow exhibited a high degree of fever, while the secretion of milk was nearly suspended.* Sacco made similar experiments, and these and his observations are as valuable as Loy's, confirmatory, as they were, of the existence of Horse-pox, and its ready transmissibility to men and cows, producing an exanthem which could not be distinguished from Cow-pock.† In 1830, Professor Hertwig and eleven students of the Berlin Veterinary School, became inoculated through handling horses affected with the disease in the limbs, more particularly. This form of Grease—in reality Horse-pox—was then prevailing as an epizoöty in North Germany.‡ In the same year Professor Ritter, of Kiel, found a man who had been accidentally inoculated in the hand with matter from horses's heels. The vesicle or pustule exactly resembled that of a Cow-pox, and from it he inoculated two children ; the result was undoubted vaccine vesicles.§ In this year, also, Dr. Rosendahl, of Nostorf, had the opportunity of observing the transmission of Horse-pox to several men ; there was accompanying fever, and in some cases delirium. ‖ Berndt alludes to an instance in which a boy was infected from a horse suffering from the so-called "epizoötic Grease," (*epizoötiscker mauke*), and from the eruption on him people were inoculated most successfully, fine cow-pocks being developed.¶ And so on with other instances.

But in every country to which Jenner's views had penetrated, much uncertainty prevailed with regard to the nature of the disease termed "Grease" or "sore heels" ; and therefore disappointment only too often followed attempts to transmit it to the cow, and so to produce Cow-pox.** In Italy, for instance, the term was translated into *giardone*, pedal fistula ; and the possibility of producing such a disease as Cow-pox from this condition placed the reputation of Jenner very much at the mercy of captious critics.

In 1840, Dard saw the disease among horses in France, and called it *Rhinite pemphigoide ;* in 1843 it was again observed in that country by Bouley, now director of the French Veterinary Schools, who designated it *Herpes phlyctenoide*, to distinguish it from Glanders and Farcy, which it somewhat resembles. But it was not until 1860 that the discovery of Jenner and the researches of Loy received further confirmation, and scientific attention was seriously directed to it. In the spring of that year the horses in the commune of Rieumes, not far from Toulouse, were attacked with a disease which assumed an epizoötic form, and in less than three weeks more than a hundred

* "Vet. Selsk. Skrifter," vol. ii., p. 137.

† "Trattato di Vaccinazione, con osservazioni sul giavardo et Vajuolo pecorini," 1839.

‡ "Med. Zeitung von dem Verein in Preussen," 1834.

§ Pfaff's "Mittheilungen aus dem Gebiet der Medicin." Iahrgang ii. Kiel, 1833.

‖ *Ibidem.* Altona, 1835.

¶ Rust's "Kritiscker Repertorium," band xxi.

** In the nomenclature of disease drawn up by a joint committee of the Royal College of Physicians, and published in 1869, I find "Grease" named *Equinia mitis*, and defined as "a pustular eruption produced by the contagion of matter from a horse affected with the Grease."

were affected. M. Sarrans, the district veterinary surgeon, reported the disease as commencing with slight fever, soon followed by local symptoms, the chief of which were hot and painful swelling of the limbs, with an eruption of small pustules on the surface of the tumefied parts. In three to five days a purulent kind of discharge took place in the pastern, which continued for eight to ten days, during which the inflammatory phenomena gradually subsided; then the pustules desiccated, and towards the fifteenth day the crusts began to fall off, carrying the tufts of hair with them, and leaving more or less perceptible cicatrices. The eruption appeared not only on the limbs, but on other parts of the body, particularly on the nostrils, lips, flanks, and vulva. There was no Cow-pox present in the locality, and the extension of the disease seemed to be due entirely to contagion. No fewer than eighty mares were infected from being sent to the Government stallions at Rieumes, the ropes with which their hind limbs were secured (passing round the pastern) being impregnated with the discharge from the heels of some diseased mare. Only three mares and two stallions escaped attack. One of the animals exposed to infection chanced to be sent to Toulouse, and not appearing so well as usual, it was left at the Government Veterinary School. It was not until it had been there for eight days that Professor Lafosse observed the mare to be dull, suffering from inappetence, and lameness in both hind limbs, with difficulty in flexing the fetlocks, and a hot, painful swelling, confined to the left fetlock, extending higher on the right leg. On these swollen parts small tufts of hair were erect here and there, and at those places there were what appeared to be pustules, from which exuded a fluid matter possessed of an ammoniacal odour, but less fetid than that of Stearrhœa ("Grease"). Lafosse thought at first that it was only the latter disease in an acute form; and he was happily inspired to inoculate a cow, in order, once more, to submit the Jennerian doctrine to an experimental test. The experiment was made eight days after the manifestation of the eruption on the mare, and was perfectly successful. Papules, then pustules, formed on the cow wherever the matter obtained from the mare had been inserted with the lancet—large, flat, firm, and round pustules, with a central umbilicus, which caused the borders to appear raised—they were the vaccine vesicles, in fact. Another cow was inoculated from this one, and had a very fine Cow-pock, from which a child and a horse were vaccinated, and these had a magnificent vaccinal eruption. A second child, inoculated with the matter from this horse, had, in its turn, a well-developed pock. Comparative inoculations were then made on children and horses with the equine virus and the ordinary humanised vaccine, and it was found that the former produced larger and finer pustules than the latter, though their evolution was slower. Lafosse designated the disease the *maladie pustuleuse vaccinogène* of the horse.

Bouley, then professor of clinic at the Alfort Veterinary School, not quite satisfied with what had been done in this direction by Lafosse and others, resolved to inoculate cows with all the eruptive maladies of the horse which his daily routine of professional duty brought before him; and, singular to relate, the very first case (in 1863) was a successful one, and produced a beautiful Cow-pox. The horse presented the following symptoms:—On the inner surface of the lips, on the inferior aspect and free portion of the tongue, on the buccal and gingival membrane, and on the floor of the mouth—particularly along the Whartonian ducts,—were infinite multitudes of small vesicles about the size of a pea, some circular, others elongated, and whose opaline tint was in marked contrast to the bright-red mucous membrane on which they were seated. These pearl-tinted vesicles were smooth on their surface, had no depression, and felt rather tense; pain was evinced when they were pressed upon. In some places they were confluent, in others

discrete. When they had been ruptured, there were small, lenticular, very red sores, with sharply-defined borders. A very abundant saliva, rendered frothy by the incessant movement of the tongue, filled the mouth, and escaped in long masses from its commissures. With the exception of not eating so well as usual, the horse appeared in good health. The symptoms were so different from those described by Loy and Lafosse, that Bouley thought it was an aphthous Stomatitis, and that therefore, like the Foot-and-Mouth Disease of bovines, it must be contagious. True to his resolve, he inoculated a cow to see what the result would be, and produced veritable Cow-pox, from which children were most successfully vaccinated. For some months other horses were admitted to the clinic of the school suffering from the same disease, which varied in its symptoms only with regard to the seat of eruption, which was in some instances as in the first case, and in others as in Jenner's, Loy's, and Lafosse's cases. From these multiplied observations and experiments, most carefully watched and discussed by the most eminent medical and veterinary authorities in Paris, there could no longer exist the shadow of a doubt as to the nature of the disease, which was accordingly designated "Equine Variola" by Depaul, and "Horse-pox" by Bouley himself. Bouley confesses that for years he had met with the disease among horses from time to time, but until Lafosse's experiments at Toulouse he had not suspected its variolous nature.

From time to time outbreaks of the disease have been recorded in France, where it appears to be most prevalent in Paris and its neighbourhood.

So long ago as 1853, I witnesed, in Manchester, a case of inoculation of a farrier who had shod a horse affected with "Grease." The vesicle was situated on the chin, and there was great constitutional disturbance.

In "Veterinary Sanitary Science and Police" I have devoted a chapter to it, and in the periodical edited by me, the VETERINARY JOURNAL, I have alluded to it frequently (particularly in vol. v., p. 81; vol. vii., p. 371; vol. ix., p. 204). A translation is also given of an interesting report by Professor Ellenberger, of the Berlin Veterinary School, of an outbreak of what he describes as "Stomatitis pustulosa contagiosa," but which was really Horse-pox. In this respect the ready communicability of the disease and its vaccinogenous character is well shown. In a recent number of the *Deutsche Zeitschrift für Thiermedicin*, Professor Friedberger, of the Munich Veterinary School, furnishes an excellent account of an outbreak in that city, and a record of successful experiments. A translation of his paper appears in the VETERINARY JOURNAL for September, 1880. In German and Italian veterinary literature similar outbreaks are described. For the past two or three years there has prevailed widely among horses in England, Ireland, and Scotland a pustular exanthem, very contagious in its character, and known among grooms and others as the "boil disease," the "American boil disorder," etc., which, in some of its features, if not in all, somewhat resembles Horse-pox. The eruption in the majority of cases is mainly confined to the trunk. From England it has been carried to Belgium, where it has attacked a large number of horses. Horse-pox has also prevailed as an epizoöty for two years, and is now prevalent, at Montreal. Many persons have been accidentally inoculated, and the vacciniferous character of the disorder has been established by medical and veterinary authorities. The outbreak is described in the VETERINARY JOURNAL for August, 1877. Last October, immediately before leaving my late regiment, the Second Life Guards, I had four cases of the disease among young horses just joined, and my farrier-major was accidentally inoculated on the finger. Surgeon Hensman of the regiment considered the case one of severe vaccination. The details are recorded in the VETERINARY JOURNAL for March, 1880.

So that since 1864, when the nature of Horse-pox was for ever settled by

the observations and experiments of Bouley, and the discussions that ensued thereon at the Paris Academy of Medicine, the history of the malady has been largely supplemented by contributions from observers and experimenters in Europe and America, and Jenner's statement has been admitted by all who have studied the subject to be true except in one particular—the "Horse-pox" or "constitutional Grease" being the source of Cow-pox. In this only was Jenner in error. The two diseases are perfectly independent of each other. Cow-pox appears where there are no horses, or possible contact with horses, and where the men who attend upon these do not milk cows. It has frequently been observed that Horse-pox prevails on a farm or in a locality, and no Cow-pox is seen there; while the last-named disease may affect a number of cows in a dairy, and the horses be entirely free from Horse-pox. Hering, for instance, states that Cow-pox is very far from rare in Wurtemberg, while Grease (*Mauke*) is extremely uncommon; that men who work horses do not milk the cows, this office being undertaken by women in that essentially milk-producing country; and that the majority of the proprietors of cows which had been affected with Cow-pox had no horses.* In none of the recorded outbreaks of Horse-pox has anything ever been said as to the existence of Cow-pox, and no attempt has ever been made to establish a relationship between the former and human Variola, from which it differs as widely as the latter does from Cow-pox. Horse-pox prevails entirely independently of Small-pox or Cow-pox. In some countries it is often present as an epizoöty—as in Lower Canada; while in other regions, where it is enzoötic, it will be more common in one part than another—as at Paris, where it is well known, and at Lyons, where, according to Chauveau, it is not seen.

(To be continued.)

TEXAS FEVER.

PROFESSOR GAMGEE writes, with reference to the subject of Texas Fever in cattle, that in 1868 he prosecuted an investigation in the United States into the cattle diseases prevailing, and among them the Texas plague. This malady was soon seen to belong to that great group of indigenous diseases transmissible beyond their home by definite and specific poison. Unlike epizoötic Pleuro-pneumonia and the Russian murrain, it was a product of the soil in the vast and virgin pastures of the south-west. With his mind absolutely free from bias, and fortified by a knowledge of endemics and enzoötics in other regions of the earth, Mr. Gamgee soon found that a simple fence would protect northern cattle from Texan herds. The sick and dying cattle of the north did not propagate the disease to other northern cattle. An infected western cow did not infect her sucking calf. Intermingling on the same pasture or the feeding on ground previously fouled by southern cattle were essential to the extermination, too often complete, of northern kine. So simple a truth has saved millions since by judicious isolation, carried out by farmers themselves. Prior to his inquiries, shot-gun quarantine was not only advocated, but practised, and a Missourian proposed as late as September, 1868, that Texas stock should not be allowed to cross the 35th parallel of north latitude alive. A glance at a map will indicate that this would have effectually prevented the supply of stock for breeding and grazing which has since overrun the North-Western States and territories. An opinion prevailed that the Texas cattle propagating the disease were healthy. They were the supposed carriers, but not the sufferers, from a virulent poison. Investigations in the Chicago slaughter-houses, on the

* "Gewiss der grosste Theil unserer Eigenthümer von Kühen mit originäre n Pocken hat gar keine Pferde." *Op. cit.*, p. 9.

Kansas prairies, and in Texas proved this to be false. They were all more or less disordered, and without exception exhibited internal lesions. Evidence, accumulating for years, has shown that the poison capable of killing ninety per cent. of the northern cattle, among which it is disseminated, passes out of the Texas steer, and in Utah or Wyoming the power of disease transmission ceases in a summer's grazing. But the animals fresh from infected soil are by no means lusty, and suffer much more than northern cattle at sea. Their latent ills readily manifest themselves in alarming symptoms, and this explains the pronounced manifestations observed by British inspectors on cattle, which, on the American side, might appear pictures of health. Any one who has ridden among herds of travelling Texan steers cannot express astonishment that they ever looked healthy. In this respect the Texas Fever is the most deceptive of plagues. The only commercial reason for the shipment of live Texan cattle is that they must always realize a better price on the hoof than dead. It may justly be said that better prices are, as a rule, realized for live than dead meat; but this admits of rectification under improved methods of handling meat. The enforcement of our laws in England can alone awaken sufficient interest and create a public opinion, without which statesmen are even more powerless in America than with us. From this point of view it is evident that British legislation against the import of disease may lead to measures which will permanently rid America of imported bovine pestilence. The enforcement of British laws is of as much importance to the American breeder and grazier as it is to the British farmer.

HYDROPHOBIA.

WE are much gratified to learn that the prize of £100 offered by Mr. Stansfield for the best essay on Hydrophobia, has been awarded to M. Bourrel, veterinary surgeon, Paris, who has a great reputation in the French capital as a canine surgeon. We are not aware if any other veterinary surgeon competed, but we feel certain that his colleagues in this country will give M. Bourrel their hearty felicitations on his success.

MEMORIAL TO THE LATE PROFESSOR DICK.

IT has been proposed to have a portrait of the late Professor Dick—founder and endower of the Edinburgh Veterinary College—painted for presentation to the Royal College of Veterinary Surgeons, to commemorate not only the advent of a united profession, but also in memory of that distinguished veterinarian. Those who are willing to assist in this memorial, are requested to forward their names and amount of subscriptions to the Editor, VETERINARY JOURNAL, 20, King William Street, Strand, London.

Proceedings of Veterinary Medical Societies, etc.

CENTRAL VETERINARY MEDICAL SOCIETY.

AT an ordinary meeting of the above Society, held at No. 10, Red Lion Square, W.C., on Thursday, August 5th, in the absence of the President, Mr. F. W. Wragg took the chair.

Mr. SAMSON exhibited a specimen of diseased heart, taken from a very fine cow that had always been remarkably healthy. She was taken ill on the 22nd July last with a common shivering fit; as the bowels did not act

he administered a little salt, with benefit. On the 23rd was sent for again: found the temperature 103½°; pulse extraordinary quick and very weak on auscultation; could hear a thumping noise on the right side, but on the left could scarcely hear the heart beat at all. It appeared to him to be a case of severe Heart Disease, and he gave very little hopes of the animal's recovery; but the owner wishing it to be treated, he ordered small doses of aconite, with gruel and beer. The animal became worse, lost her supply of milk, and her appetite failed, dying on the 2nd August. The temperature was then 105⅓°. He made a *post-mortem*, and slit up the pericardium to let out the fluid, of which there was as much as from twelve to fourteen quarts (sample shown), exceedingly offensive and thick. All the other organs of the body appeared healthy; the diseased heart was affected from its apex to its base and all round one side. Four days before the animal's death he heard the heart beating in the fluid; there was no swelling in the jaw.

Mr. GERRARD had known a similar case, arising from a pin penetrating the heart.

Mr. STEEL remarked the disease was usually preceded by attacks of indigestion. The lesions appeared to have existed some time.

The CHAIRMAN thought it must have been a case of Peritonitis.

Mr. SHAW observed it was no uncommon thing to see a diseased heart in a bullock, he frequently saw it. Quite recently a case came under his notice which was condemned for Pleuro-pneumonia; there was an immense quantity of water in the pericardium. He had never seen a case like the present, and should think the disease must have been present months before death. Many similar cases arose from a nail, piece of wire, or pin going through the heart, and such was not discovered until after the animal was killed; numbers of beasts went to market so.

Mr. STEEL said, as a rule, upon making a *post-mortem* examination there was not such a condition of the pericardium and heart's surface, and its general structure, as found in this case; he generally found the fluid in the pericardic sack of a milky, yellowish colour, sometimes reddish (but that was the exception), and was inclined to believe it was seldom, if ever, found, except with some communication with the heart cavity before death.

With regard to the nature of the deposit on the heart, in ordinary cases it had not that leathery characteristic seen here, more often appeared as a thick tough membrane. The deposit is of a lighter character; in ordinary cases it undergoes calcareous change, and is somewhat gritty, and its feeling to the knife is different to that of the specimen exhibited, which he saw required careful examination, and might probably prove to be a case of Idiopathic Carditis in the cow, and if so, would be a valuable addition to their literature on the subject. In reply to Mr. Gerrard, had mostly found the secretions in all chromatic cases to be of a white, milky character, but in some instances they were reddish.

Mr. GERRARD said his experience was, the secretions were more of a milky character. Cases of this disorder abounded more in the north of England than in the southern counties, as there women were frequently entrusted with the care of cows, and often dropped hair-pins, pins, etc., among the animals' food. He had not previously heard of the symptom of the disease mentioned by Mr. Samson, viz., the extraordinary swelling of the jugular veins, and would like to know if that gentlemen observed any regurgitation in that case.

Mr. SAMSON stated that in both jugular veins the blood passed freely up and down; he stood and watched the cow for half-an-hour at a time—there was no regurgitation. The fluid he exhibited had a most offensive smell: had opened many abscesses, but never came across one so foul.

Mr. BROAD exhibited a specimen of the whole wall of the right ventricle

of a horse's heart; it did not represent all the atrophied portion. Four years since he attended the animal for Heart Disease and indigestion. It was laid up for a month. Noticed an intermittent pulse-stopping after every third beat. The horse went to work, but always had the intermittent pulse; observed no other illness. He was called to see the mare a few weeks since and found her very ill; while he went to get some medicine she dropped and died. He found the abdomen full of dark blood; could only determine that the rupture proceeded from the mesenteric vessels, but from the careless way they were cut could not ascertain the cause of the rupture; no blood could have escaped from any part but the vessels. The only symptoms might have been dropsy from the side of the bowels to the whole extent of the mucous membrane, where there was a thick deposit of gelatinous consistence. The disease appeared to have been present a long time. There were miliary and other tubercles, both in the lungs and liver, which presented the exact appearance answering the description of the calcareous tubercle—like a button embedded in the surface. The horse was probably twenty years old; the owner had had him some fourteen years. Some glands he had found removed from the inferior portion of the diaphragm—which appeared to be diseased—but he was so far forgetful of anatomy as not to recognize the glands. The tubercles were the same as found in Glanders. There was no rupture in the heart; the liver, spleen, and kidneys were all sound.

Mr. SHAW drew attention to the remarkable thinness of the wall.

Mr. GERRARD remarked an intermittent pulse was very common at times. He had a case very similar, a six-year-old horse; the abdominal cavity was filled with blood, the heart was quite healthy—he could not detect anything wrong. It might have been caused by galloping, leaping a fence, or something of that sort; could not find where the escape came from.

Mr. SHAW was at a loss to understand how the horse could work in the state she was in; with the wall of the ventricle so thin, she must have been greatly distressed at the least exertion.

Mr. BROAD said that was the case, and he believed the acute symptoms were brought on by her having taken a longer drive than usual. When at the Crystal Palace, she had a slight attack, and that brought on the illness. She had been in regular work and was a well-bred mare.

The CHAIRMAN stated his experience was that Heart Disease in the horse was of common occurrence, and it was the exception rather than the rule, upon making *post-mortems*, to find them with healthy hearts. In his practice, which was principally among draught-horses, he invariably found fatty degeneration, atrophy or hypertrophy of the heart, and horses were capable of undergoing great exertions under such conditions: it surprised him how they underwent so much with Heart Disease.

The CHAIRMAN, in calling attention to Mr. Broad's paper, on "Glanders and Farcy," regretted he had not attended the two previous meetings, but he now desired to draw their attention to the length of time the disease often laid dormant in the system. One case particularly impressed him. Two horses belonging to a London brewery were taken out to grass. One became affected with Glanders, and was destroyed; the other was left out six weeks or two months, he appeared all right when brought up, and was put to work—ten months after this horse broke out with Farcy. He had no proof of it, but felt certain this horse contracted the disease while out to grass with the other one, and became inoculated, and that the disease laid dormant ten months. During a period of sixteen years they only had one case of Farcy in the stud of sixty horses; they had water supplied them in their mangers, and to this provision he mainly attributed their freedom from Glanders and Farcy, as they could obtain drink at night.

Mr. SHAW said he would like to ask Mr. Broad whether feeding horses with maize had anything to do with the disease, as many horses in London were fed upon it.

In reply to Mr. Gerrard, the CHAIRMAN said he had no positive proof the animal he referred to might not have contracted the disease elsewhere than from the horse he was put out to grass with. He would not say the poison of Glanders *always* laid dormant in the system for so long a time, very much depended upon the constitution of the animal, its freedom from organic disease, and other considerations; he thought neither himself nor any one else could determine how soon the disease would come on.

Mr. GERRARD said he believed in the laying on of water in stables; he thought drinking-troughs did more harm than good.

Mr. SAMSON remarked that to detect ulcers in the nostril he used a small bull's-eye lamp, and found it preferable to a candle, which the animals frequently extinguished.

Mr. HUNTING said he would refer to one or two topics shortly :—

As to *Incubation.* It was one of the most difficult, and also one of the most important points to deal with, the difficulty being, that horses kept for work, travelling about town or country—exposed to various conditions—it was next to impossible to say how long the period of incubation was. In the case mentioned by the Chairman, it was impossible to say the horse might not have been contaminated, not at the time he was in the field, but a month previous—such might have been the case. It was well known that the period of incubation extended to a considerable time; for a certainty he could say it might be as *short* as eight days in direct inoculation, and it might *extend* (from his own experience in a number of cases) to three months. This period of incubation had a very important medical legal bearing: if a man bought a horse and it became Glandered, or showed symptoms of the disease shortly after purchase, it became a question for veterinary surgeons to decide, Was the horse glandered or not at the time of sale? He believed the French law required a period of eighteen days to elapse, and if Glanders showed itself within that time, the law takes it that the animal had Glanders in its system prior to sale. This seemed a very fair period to allow, and such a law would be good for this country, the burden should rest upon the seller if the disease appeared within eighteen days after purchase.

Another medical and legal point in Glanders and Farcy was the *duration* of the disease. He differed from some veterinary surgeons: he had seen more than one certificate saying, "This horse is suffering from Glanders of long standing." Now there were very few cases in which a man had a right to say this, unless the symptoms were very extraordinary. In his experience he had over and over again seen such a group and combination of symptoms suggestive of disease of *long standing*, but which, in reality, had only existed two or three days; and he thought there was nothing more difficult than to say a horse was suffering from disease of three, two, or even one month's standing. He did not believe any man could say a horse had been glandered for one month.

As to the *cause* of Glanders, he believed there was only one—viz., contagion. He would at once negative such a suggestion as the eating of maize, as his father used it very largely with beans, and his horses never suffered. He did not like the drinking-troughs accused of being spreaders of the disease, and now there were very few glandered horses to be found about London streets.

Mr. SAMSON considered the spread of Glanders more due to horse repositories than drinking-troughs.

Mr. STEEL differed from Mr. Hunting as to the inability of veterinary surgeons to fix the length of duration of disease from appearances of living

animals; he thought, under certain conditions, and when they presented peculiar symptoms, it was possible for them to fix the time to at least one month, by careful examination of certain lesions in the mucous membrane and skin, and when they found a cicatrix in the Schneiderian membrane also. He was sanguine enough to hope a cure would yet be found for Glanders, and alluded to the fact that Dr. Granville, in working up the pathology of Glanders, thought he had made important discoveries of bacterial element, different from that found in Anthrax—the subject had been largely discussed on the Continent, but still remained to be proved. He (Mr. Steel) thought it possible there might be a state of the blood in which the poison of the disease was diffused through the system, and yet left no local lesions indicative of its presence.

Mr. SHAW said he knew a case of a horse working in Russell Square the night previous, with twenty Farcy buds on him; the man said, "It only broke out in the night." He quite agreed with the Chairman, that the disease could exist in the system for months: in giving an opinion, they should always notice the purple colour of the membrane. He had noticed an invariable sign of lung disease was, an animal affected would grunt if one went to strike him.

Mr. STEEL said, respecting Mr. Gerrard's question about the purple colour of the mucous membrane, as confirmatory of the animal being affected, and as a reason for its isolation, where there is an outbreak of the disease and no one lesion can be detected as described of Glanders, the ulcers probably arising from other causes, the history of the case must be studied with all the particular bearings of the disease, or supposed disease, with which they had to deal.

Mr. SAMSON noticed affected horses presented a bluish-purple appearance of the Schneiderian membrane, also frequently a loss of flesh about the hind quarters.

Mr. HUNTING, in referring to the duration of the disease, said other diseases than Glanders might produce cicatrix mentioned by Mr. Steel; it might follow Schneiderian ulcers in the nostril after Influenza. A disease which he called German Small-pox left scars like Farcy buds all over the body; the swelling in the leg might be an ordinary case of Lymphangitis; falling away of the hind legs might be the result of old-standing case of Mudrash; in fact, all the symptoms of old-standing Glanders might arise from other causes, and were therefore misleading.

Mr. STEEL said, in a case he knew of, the chronic lesions could be traced through different stages; they were more acute—plainly show, for instance, on the membrane, that an ulcer left a cicatrix behind; and sometimes, from the symptoms, he would have no hesitation in saying in a court of law that a case had existed for one month.

The CHAIRMAN said it appeared quite evident that if one had a horse in London falling off in condition, discharge coming from the nostril, and swelling of the glands, he might be killed with a certainty the animal was glandered; but this could not be done in any other place but London, which he thought the hot-bed of the disease. He considered both horse repositories and water-troughs great sources of contagion.

Mr. BROAD said, as stated in his paper, there appeared nothing wonderful in the disease lying dormant in the system, tubercles in the lungs frequently required extraneous conditions to set them at work. He concurred with Mr. Hunting's remarks on the legal bearing of the disease as to the liability of the seller. Mr. Shaw's allusion at the previous meeting to the incautious usage of brushes and combs was a good one. Considered Mr. Samson's method of using a bull's-eye lamp to examine nostrils good, and thought, if used in conjunction with the glass he (Mr. Broad) had exhibited,

it would be an excellent aid, and preferable to daylight. He differed from Mr. Hunting as to the length of period of incubation; that gentleman fixed it at three months, he thought it might be an almost indefinite period, the disease might manifest itself after three years' incubation.

The usual votes of thanks were then accorded, and the proceedings terminated.

Present, nine Fellows and three visitors.

JAMES ROWE, *Hon. Sec.*

LIVERPOOL VETERINARY MEDICAL ASSOCIATION.

THE sixty-third quarterly meeting of this Association was held at the Medical Institute, Hope Street, on August the 20th, the President, Mr. Charles W. Elam, occupying the chair. There were present—Professor Williams, Edinburgh; Messrs. R. S. Reynolds, G. Morgan, A. Bain, W. T. Moore, E. Kitchin, Jackson, Beel, and Michaelis, and the Secretary, Liverpool; Messrs. T. Hopkin, W. A. Taylor, E. Faulkner, T. Greaves, and S. Locke, of Manchester; Lloyd and Edwards, Chester; W. Woods, of Wigan; Ferguson, Warrington; R. Ellis, Ormskirk; Dacre, Altrincham; T. Stone, Walkden; and Mr. Lyman, Boston, U.S.A.

Letters, etc., regretting their inability to attend were received from the following gentlemen—Messrs. Welsby, Liverpool; Whittle, Worsley, Peter Taylor, Manchester; Jas. Moore and George Fleming, London; Henry Barnes, Malpas; L. Butters, Norwich; and Lewis, of Crewe.

It was proposed by Mr. R. S. Reynolds, seconded by Mr. Morgan, and carried unanimously, that Mr. R. C. Edwards, of Chester, and Mr. Kitchin, of Liverpool, be elected members of this Association.

In consequence of the unavoidable absence of Mr. Peter Taylor, the adjourned discussion of his paper on "Counter-irritation," was postponed until the next meeting.

Professor WILLIAMS then read a very able and scientific paper on "Purpura Hæmorrhagica," which was followed by an animated discussion.

Mr. MORGAN said he could not account for the disease being more prevalent in Scotland than elsewhere, as stated by Professor Williams. His experience was that more died than recovered; he thought that Purpura Hæmorrhagica and Scarlatina were often confounded with each other, and that a prominent symptom in Scarlatina was the presence of a bloody exudate all over the body, which is easily detected by passing the hand through the hair. He thought that a frequent cause of "Purpura" is the debility which exists during recovery from chest disease; agreed with the treatment adopted by Professor Williams, viz., Potass. Chlor. followed by Spts. of Turps. and Ferri Perchlor., but would also give stimulants to support the system; would not hesitate to scarify the tumours and allow the contents to escape.

Mr. R. C. EDWARDS had not seen many cases except when in Edinburgh; had treated formerly with Terri Perchlor., but now prefers Potass. Chlor. Has tried Potass. Bichrom., but had found it unsatisfactory.

Mr. GREAVES has had considerable experience of the disease; the majority die. Agrees with Professor Williams that it arises from septic material in the atmosphere. Favours the treatment adopted by the late Professor Dick, viz., to rid the system by the alimentary canal; does not hesitate to puncture freely. Had recently a bad case, and punctured scores of times, and obtained a bucketful of straw-coloured serum; the horse did well. Recommends exercise, although apparent cruelty. Has tried Potass. Chlor., but without much benefit; approves of the application of hot fomentations to the swellings.

Mr. MOORE does not agree with Mr. Greaves in puncturing; has seen many cases, and finds that puncturing leads to sloughing. Does not interfere with the bowels. Has given Potass. Bichrom. for eighteen years, and finds it eminently satisfactory.

Mr. HOPKINS agrees with Professor Williams that "Diarrhæmia" is a better name for the disease. Favours the use of Spts. of Turps. and Potass. Chlor.; recommends the administration of dry fibrin; does not puncture the swellings except those about the nostrils, thus trying to avoid tracheotomy. If the swellings slough in consequence of puncture, considers it preferable to the performing of tracheotomy. Has not noticed the extreme variations in pulse and temperature. Does not agree with Mr. Greaves as to exercise, as in his opinion it exhausts the patient. If constipation exists he acts gently on the bowels.

Mr. DACRE considers the miscroscope gives little aid in blood diseases. Believes that there is no special mode of treatment. He leaves matters alone externally, and varies the internal treatment according to symptoms. Thinks that Professor Williams' success is remarkable; in Manchester they are not so successful. Has tried Potass. Chlor. in water without success. Would suggest subcutaneous injections of ergot.

Mr. WOODS has had many cases. Finds that they always follow debilitating diseases. Gives Spts. of Turps. and Potass. Chlor., and also recommends mild purgatives, cleanliness, and the use of disinfectants.

Mr. W. A. TAYLOR thinks that the term "Purpura Hæmorrhagica" does not give a direct clue to the disease as we find it. Has noticed the great discrepancy maintained by Professor Williams in the pulse and temperature, the latter being 102° in the morning and 106° in the evening, without a corresponding increase in the number of pulsations; could not account for it. Had noticed in one case attempts at vomition caused by the sloughing of a portion of the duodenum. Never punctures, believing that the admission of the atmosphere would produce Pyæmia. Gives Spts. of Turps., afterwards Potass. Chlor., followed up by vegetable and mineral tonics.

Mr. LYMAN had not met with many cases in America, where bad ventilation is almost universal. He had experienced some cases followed by the horse disease. Considered it to be of a septic nature. He gave the history of a case which died from intestinal hæmorrhage.

Mr. REYNOLDS thinks also that "Diarrhæmia" is a more appropriate name for the disease. He has observed that the use of Spts. Turps. and physic has been followed by good results.

Mr. FAULKNER thinks that Professor Williams has given us good pathology of the disease as one of a septic, distinguished from that of an anthrax nature. Has not noticed the variations in the temperature and pulse. Gives Potass. Chlor. alternated with Spts. of Turps., with mild laxatives; afterwards vegetable tonics. Never saw sloughing or any unhealthy wound produced after puncturing.

The PRESIDENT has not seen many cases in Liverpool. Gives Potass. Chlor. in water, Spts. Ammon. Co. and Spts. Turps. Has given of late milk in large quantities as food, believing it to be readily assimilated.

Professor WILLIAMS, in reply, said that the true principle of treatment lay in destroying the cause; the employment of ergot only attacked a symptom, as in this disease there is a great tendency for the blood to leave the vessels without rupture taking place. The administration of Spts. Ammon. Co. is quite inadmissible, as it increases the fluidity of the blood, which in this disease is only in an anæmic condition. He entirely disagreed with exercising the patient, as he would in cases of Laminitis. Did not favour puncturing, as it brought about decomposition of the subcutaneous tissues. If constipation exists, he gives about eight or ten ounces of linseed oil along with

Spts. Turps., to act on the kidneys. Does not think much of the administration of fibrin.

Mr. Woods proposed, and Mr. Reynolds seconded, a vote of thanks to Professor Williams for his valuable paper. A similar compliment having been paid to the Chairman, the meeting terminated

WM. LEATHER, *Hon. Sec.*

MIDLAND COUNTIES VETERINARY MEDICAL ASSOCIATION.

A MEETING of the Midland Counties Veterinary Medical Association was held at the Star and Garter Hotel, Wolverhampton, on August 10th. Professor Pritchard, of the Royal College of Veterinary Surgeons, London, presided, and there was also present Messrs. R. Pritchard, H. J. and R. H. Cartwright, J. W. Hill, E. Beddard, W. Phillips, J. Robinson, J. Bate, and A. Butters, Wolverhampton; A. Hodgkins, Hanley; A. Green and J. Walker, Dudley; R. Trigger, Newcastle; E. Meek, Walsall; F. W. Wragg, London; F. and J. Blakeway, Stourbridge; E. Yorston, Manchester; E. Hodgkins, Uttoxeter; A. Over, Rugby; E. Price, jun., Birmingham; G. Careless, Worcester (hon. sec); H. Collett, West Bromwich; H. Beach (The Hattons); H. Olver, Tamworth; J. Cole, Stoke-on-Trent; and J. Attwood Bilston.

It was stated that Mr. W. Careless, of Stafford, was not put in nomination for the Council of the Royal Veterinary College since the last meeting, on the ground that many members of the Association had expressed their intention not to support him.

On the motion of Mr. Hill, seconded by Mr. F. Blakeway (Stourbridge), it was decided to forward a letter of apology to Mr. Careless for the omission of his nomination.

An explanation of the reason for omission as given above was accepted as satisfactory.

Mr. F. BLAKEWAY (Stourbridge) brought forward a proposition to support the action of the Parliamentary Committee of the Royal College of Veterinary Surgeons to obtain a penal Act to prohibit persons from assuming the title of veterinary surgeon without a certificate from the College. He explained that Mr. Fleming, of London, and others were working very hard to secure the obtainment of this penal Act. It would be the means of protecting the members of the profession, on whose training great expense was incurred. Mr. Olver seconded the motion, and said the Act would have the effect of keeping improper men out of the profession. The Chairman briefly supported the motion, and stated that the Act would be a very judicious one. He thought the Council would adopt a wise course if they accepted it.

The motion was then put and carried unanimously.

The PRESIDENT congratulated the members upon the healthy condition of the Association, which not only comprised more members, but had also its finances in a better state than hitherto. He then called attention to an interesting case of fracture of the radius of a horse. He alluded to it from three points, viz., the infliction of direct injury, concussion, and violent action of the muscle. Fracture of the radius might be produced by the animal being kicked by another horse. Concussion could be produced by the animal dropping over a fence, or fracture might be caused by the sudden contraction of muscular fibre. In the case which came under his notice a horse, after making a false step, suddenly became lame. The animal was unable to walk forward, although it could walk backwards with a tolerable amount of ease, and not with the same pain produced by a walk forwards. Finding that the animal, which belonged to one of the railway companies in London, did not get any better, he advised it should be slaughtered. This was done under

his (the speaker's) directions, and on making a *post-mortem* examination of the body, he found that a tendon under the elbow-joint of the injured leg had become suddenly contracted, and in the contraction a small piece of bone was torn away, and that this had produced the lameness. Mr. Blakeway also mentioned a case of muscular contraction caused by a mare working in gearing, jumping forward in her collar while ascending some rising ground.

Mr. BEACH explained to the meeting the use of an ecraseur patented by himself, for cutting off warts, tumours, any morbid growths, and in obstetrics, etc. The instrument contained several improvements upon Farmer Miles's instrument, which had been much used by the profession. Its simple construction was explained to the meeting and was much admired.

The PRESIDENT said that he was more than ever satisfied with the use of the ecraseur, though some people did not like it because they were afraid of the danger of hæmorrhage following the use of the instrument in certain cases. Several members expressed themselves in favour of the ecraseur, though two or three thought the slow motion of the chain in castration was more likely to be followed by hæmorrhage than the quick motion, and others entertained the opposite opinion.

Mr. GREEN next interested the meeting with a specimen of calculus, taken from a horse fourteen years old. It was a hard stony substance, formed in the cheek of the animal from the retention of the saliva in the duct of one of the glands.

The PRESIDENT stated that up to the present it had almost been regarded that the removal of the calculus should not be made, as it was thought likely to be followed by the formation of a fistula.

Mr. J. W. HILL exhibited a sample of forage sent by Mr. Boycott Wight. The sample was an army ration of a horse for one day, and consisted of oats, beans, Indian corn, and hay, and weighed altogether 28 lbs.* By hydraulic pressure a wheelbarrowful had been reduced to 15 in. by 6 in., and 4 in. deep. Several gentlemen admired the sample for its portability in transit. The price of the forage was £10 per ton, or 1s. 6d. per sample. Mr. Hill explained that Mr. Boycott Wight was using it with his horses. In reply to questions, Mr. Hill said 14 lbs. of corn per day was the usual ration for an army-horse.

It was decided to hold the next meeting of the Association at Stafford, and the meeting will be opened by the reading of a paper on some professional subject by Mr. Hill.

The thanks of the meeting were passed to the gentlemen who exhibited specimens.

On the motion of Mr. Cartwright, seconded by Mr. Over, a cordial vote of thanks was accorded to the Chairman for presiding. The company afterwards dined together, when they were joined by Captain C. Boycott Wright, J.P., and several other friends. The toasts were of a purely complimentary character.

* There is some mistake in this statement. The ordinary daily ration of oats for troop-horses is 10 lbs. They neither receive beans nor maize.—ED. *V. J.*

Army Veterinary Department.

Gazette, September 3rd.

1ST LIFE GUARDS.—Veterinary Surgeon First Class M. Mence retires on half-pay.

VETERINARY DEPARTMENT.—Veterinary Surgeon B. L. Glover, Royal Artillery, to be Veterinary Surgeon, First Class, in recognition of his distinguished service during the recent operations in South Africa.

Gazette, September 10th.

VETERINARY DEPARTMENT.—J. Cooper, Gent., to be Veterinary Surgeon on probation.

Obituary.

THE death is reported of Mr. J. Shaw Jackson, of Lythe, Whitby, Yorkshire, who graduated in 1871.

Mr. W. Boyd, Royal Horse Artillery, is announced as having died on September 20th. Only a few months ago, he returned to England from India on sick leave, and was put on half-pay. His death appears to have been sudden. He graduated in April, 1867, and soon after joined the army; on July 31st, 1879, he was promoted to the grade of First Class.

Notes and News.

VETERINARY HONOURS.—At a *concours* opened at Paris for the election of *Agrégés* in the departmental Faculties of Medicine, M. Arloing, Professor of Anatomy at the Lyons Veterinary School, was inscribed first on the list of nominated candidates, and was appointed to the Faculty of Medicine of Lyons, as Professor of Physiology. M. Toussaint, Professor in the Toulouse Veterinary School, has been designated titular Professor of Physiology at the School of Medicine in that city. Mr. Fleming, Army Veterinary Inspector, has been elected an honorary and corresponding Member of the Société de Médecine Vétérinaire Pratique of France.

ROYAL VETERINARY COLLEGE.—We believe that Mr. Robertson, F.R.C.V.S., of Kelso, has been appointed a teacher at the Royal Veterinary College, and enters upon his duties this month. The teaching staff of that school has been strongly reinforced by the accession of Mr. Robertson, whose capabilities as a practitioner and an examiner have long been known to many in the profession; while the rank and file of the practitioners lose one of their best men. We understand that Mr. Robertson is to lecture on horse pathology.

WILTS AND HANTS AGRICULTURAL COLLEGE.—We learn that Mr. J. W. Hill, F.R.C.V.S., has been appointed lecturer on veterinary surgery at this new agricultural school. This new function will not prevent Mr. Hill carrying on his practice in Wolverhampton, the lectures being only delivered at intervals of a week or fortnight.

CATTLE PLAGUE.—Cattle Plague is extending in Europe. It always does after wars. It has been officially announced in St. Petersburg that Cattle Plague has broken out on the shores of the Black Sea, in Bessarabia, Volhynia and Podolia, as well as on the Baltic shores. The disease, so far as at present ascertained, is raging in forty-three separate districts, and has even made its appearance in the St. Petersburg Zoological Gardens, where it has

already carried off some rare and valuable animals, including stags, wild goats, and a llama. Cattle Plague has also made its appearance in several villages in the province of Sharkich, Lower Egypt. The kingdom of Hungary remains free, but the disease exists in Crotia, Sclavonia, and in the military frontier. In Cyprus 1,540 animals had been attacked, and 1,447 had died to the end of May.

THE *Pravda*, a Russian newspaper, says that an outbreak of cattle-plague of the most virulent description is announced in the province of Volhynia, the principal cattle district of Russia. In one village alone, two hundred head of cattle died in a few days, and in many parts of the province not a cow remains alive. Most of the peasants depending upon cattle-rearing for their livelihood, the losses sustained have reduced them to beggary. The *Golos* states that the disease has made its appearance in the Vistula province, destroying hundreds of oxen near Warsaw. The Russian authorities are making no effort to check the disease.

PLEURO-PNEUMONIA IN LANCASHIRE.—The Executive Committee appointed under the Contagious Diseases (Animals) Act, 1878, for the carrying out of the provisions of that Act in the county of Lancaster, have issued their second annual report, in which they state that while no case of Foot-and-Mouth Disease had occurred in any part of the county during the year, there had been no appreciable diminution in the number of cases of Pleuro-pneumonia. The net charge to the county rates for the year ending August 31st, 1879, was £4,407 3s. 6d., as against £3,832 18s. 8d. for the year ended August 31st, 1880, showing a decrease of £574 4s. 10d. On the 31st August, 1879, there were 19 places infected with Pleuro-pneumonia, and during the year ending August 31st, 1880, there were 73 other farms or premises declared infected, making a total of 92. The number of animals attacked was 174, and of these 169 were killed by order of the local authority, and five died; and 28 healthy animals were killed by the owners, and 73 by order of the local authority. The disease was most prevalent in the Blackburn and Salford hundreds, where the animals affected numbered respectively 77 and 76. The amount of compensation awarded out of the county rates had been £2,053 6s. for 189 affected animals, and £1,393 10s. for 110 sound animals, making a total of £3,446 16s. in respect of 299 animals. Towards this sum an amount of £620 8s. 3d. had been received from the sale of carcases, making a net charge on the rates of £2,826 7s. 9d., showing a decrease of £688 6s. 6d. as compared with the net charge of the previous year.

Correspondence, etc.

PUNCTURING AND EXERCISE FOR PURPURA HÆMORRHAGICA.

To the Editor of the VETERINARY JOURNAL.

SIR,—The physiology and pathology of this septic disease was most clearly and ably reviewed in a very scientific and luminous manner, before the Liverpool Veterinary Medical Association at their last meeting, by Professor Williams. The discussion which followed was most interesting. It referred chiefly to the treatment of the disease; and since my method of treatment, the result of close and careful observation during a tolerably long experience, seems to be at variance with that of some of the other members, I feel a desire to state my case more clearly and more at length. It is not

my intention to discuss the cause or the nature of this disease, but simply confine myself to the treatment. The medical part of the treatment advocated seemed to be nearly the same by the various speakers, viz., aperient medicine, Spirit of Turpentine, and Chlorate of Potass; but puncturing the swellings, and giving the patient exercise, was condemned by several members as objectionable—condemned, as it appeared to me at the time, on insufficient grounds, if not in the absence of any grounds whatever. Several cases were related in which extensive sloughing—deep sloughing, had taken place in cases where no puncturing had been resorted to. It has been my good fortune to have listened to several very interesting papers read and discussed at the Midland and other Veterinary Medical Associations. I have listened to the views propounded by gentlemen who differed from me in opinion at the time, but who, nevertheless, always demanded the greatest attention. I have endeavoured most earnestly to gain whatever knowledge I could on each and every occasion, and I freely admit that I have often gained information which has been of great benefit to me in practice. It has been my custom to receive facts or any new method of treatment which seemed to possess within itself sound principles, and especially if the results of that treatment showed a percentage of recoveries exceeding those of my own. It is at these meetings a man finds his level, and any fact or hobby he may have is exposed and exploded. It was quite immaterial to me whether this information was advanced by a young intelligent practitioner, or by one who was a close observer for a long series of years; even the best methods of the shrewd non-qualified man have not been repugnant to me, I have always felt a sincere thankfulness for such information. But when I listen to opinions expressed by an intelligent and close observer, one who does his own thinking, one who has borne the heat and burden of the day during a long life in the daily practice of his profession, I feel I am specially bound to respect and honour those opinions, even though they be new opinions to me; and at first they do not commend themselves to my mind, or impress me very favourably—nay, they may not seem strictly in accordance with scientific principles, still I feel that they must have something of worth in them, or they would not be uttered by such a man, for do we not find practical experience is simply the proving of different methods, those methods which are not successful when fairly tried are cast aside, and those which are successful are retained? It is thus that facts are accumulated in each individual life—but prejudice always hinders the reception of truths. There are those who seem not to be cognisant, or else they are unbelievers in these truths; they condemn and deride all methods of treatment of which they know nothing. Prejudices have yet to be overcome and conflicting opinions reconciled. My opportunities for observing and treating cases of this disease are perhaps not quite so extensive as some of my fellow-practitioners has been; yet for more than forty-six years in continuous practice, in which has occurred probably eight to twelve or more cases in a year, I have witnessed the disease in all its varied forms, some acute, carrying off its victims in three hours, when the disease attacks vital organs, others in various periods of illness from three hours to three or four weeks. I have carefully employed various methods of treatment at different periods of my life, and with varied success. I have a distinct recollection of at one period of my life, about twenty to twenty-five years ago, being sorely perplexed. I had three valuable cases on hand at one time; they were, in spite of my most anxious and careful attention, doing unfavourably. At that moment my assistant, a shrewd Scotchman, "the genuine article, I believe," intimated to me he thought that he could make an improvement upon my method of treatment. He did this pleasantly and respectfully, which took the sting out of the idea of a servant teaching his master. I consented to his

taking one of the cases, "the worst case of the three," into his own care. He at once punctured all the most prominent swellings in the legs, belly, breast, and head in many places; he used a broad-shouldered lancet, and each stab was ½ inch or ¾ inch deep, and had the horse exercised. The animal was so stiff that he had to lift the legs one by one; locomotion could only be effected by this means. He spent an hour at a time most industriously with the case three or four times a day. Day after day he busied himself in puncturing, fomenting, and exercising the animal; the medical treatment, the same as the other two cases. This case made a fine recovery; the swellings subsided entirely, and his health became completely restored. The other two cases died from breaking-up of the lungs, stinking breath, etc., I remember him saying, if you puncture freely early in the complaint you will never have any sloughing of the integument; it was his custom to puncture freely and always give exercise in the early stage of these cases, and also in all cases of common humour or weed. I have seen bad cases of weed, acute cases where the limb was enormously swollen, make good recoveries, become fine and sound as before, through this mode of treatment. These cases made impressions on my mind that nothing can efface; since then I have adopted this system of treatment. It is often surprising the large quantity of straw-coloured serum that escapes from the puncture; this lymph would have become coagulated and organised. I am free to admit that this method of treatment is attended with a percentage of recoveries far greater than resulted from my former mode of treatment, and, as far as I can ascertain, than that of any other practitioner I have had the opportunity of comparing notes with.

Yours obediently,

Knott Mill, Manchester. THOMAS GREAVES, F.R.C.V.S.

THE VALUE OF APPRENTICESHIP.

To the Editor of the VETERINARY JOURNAL.

SIR,—The proposal to make an apprenticeship a compulsory qualification for the diploma is, to my mind, a mistake and retrograde step. Doubtless it is made with a view to the advancement of the profession, but that it will attain such a desirable event is more than doubtful. Although the proposal is so worded that any student can perform the necessary pupilage after one or more sessions at college, circumstances and convenience will force nearly all men to undergo the apprenticeship anterior to their commencing study. Practically, then, the effect of Mr. Fleming's proposal will be that all students will, prior to their entering college, serve an apprenticeship with some practitioner.

So far as I can see, the only benefit to be obtained by an apprenticeship previous to entering college, is that a youth may obtain some knowledge of animals, of diseases, and of drugs. What sort of knowledge this may be is perfectly indefinite, depending, of course, upon the kind of practice he sees, and the kind of man he sees it under. Here and there may be found a man the quantity and quality of whose practice is worth seeing, and who, at the same time, has time enough to explain to his pupil what is to be seen. They are few and far between. The man of large practice is generally too busy for much clinical explanation; besides which, he has an immense quantity of drug-mixing, to which the energies of a pupil are specially directed. If the master keeps a good horse—not a common event—the pupil may learn something of the points of the animal, and he may learn to ride and drive. In fact, if a youth be lucky enough to get with a good average practitioner, he may in two years know the name and dose of most of

the common drugs, he may be able to recognise a few of the more common diseases and lamenesses, and he may have mastered the ordinary habits and form of some of the domestic animals. Of this latter knowledge, however, he cannot in two years have obtained anything approaching that possessed by a youth who has passed a similar time with a horse-dealer or large farmer. The strictly professional knowledge obtained in a two years' apprenticeship, served by a boy without any college teaching, can be picked up in six months by any man who has worked one session at college.

If an apprenticeship be enforced with a view of helping to make successful practitioners, then I say the profession is exceeding its duty, because success does not depend upon professional skill. If it be enforced with a view of improving and advancing the profession, I reply that it cannot have any such effect, but rather the opposite. If we could insist upon an apprenticeship being served after one or two sessions at college, we should improve our practitioners and advance our profession, because we should then force men to be clinically instructed, and give them the power to understand and appreciate what they saw. They would be supplied with principles which would guide them to an enlightened observation, and possibly suggest a little original research.

An apprenticeship, when voluntary, is bad enough, but if made compulsory will be simply a deception and a snare. Utterly unfit men will receive pupils, and pupils will perforce, and not from inclination, "put in" just sufficient time and work to obtain the necessary papers of qualification. We shall have fortified the entrance to the profession with another obstruction, but it will be one not requiring attack, but simply a slight *detour* to avoid it. Are there no men in the profession whose practice is radically bad? None whose example would be worse than useless? What is there to prevent such men from taking pupils? Or, again, why should not a decent practitioner receive, say eight or ten candidates for "signed articles"?—a number impossible to do justice to.

I go further than this, however. I hold that an apprenticeship, even with the average practitioner, as now too often undergone, is not only negatively, but positively bad training for a veterinary surgeon. A boy of sixteen, who ought to be at school, goes to a M.R.C.V.S., serves an apprenticeship, at the end of which he proceeds to college with a mind imbued with many crude ideas, and nearly always with the sole object of obtaining his diploma. He does not go to study; he has already learnt. He "has seen practice," and now "only wants the theory."

From sixteen to eighteen years of age is a critical time of life. It is the time of all others when minds are most flexible, and the bent then given is seldom much altered. Give at this time to a youth's mind a mechanical notion of disease; teach him to be satisfied if he can give a symptom or group of symptoms a name, and to be content to term a drug, or mixture of drugs, a cure; permit him to believe that science is merely theory, and the practice of medicine only a means of gaining a livelihood, and you certainly put an end to any probability of his advancing one step beyond the practice of his teachers, or to his adding one iota to the collective knowledge of his profession. The very fact of a man "seeing practice" before he has been to college, must either confine him to, or force him into, a rule-of-thumb groove, out of which it is not easy to rise. Apprenticeship, as the commencement of a medical career, is a mistake. It is like sending a man to sea without chart or compass when both are obtainable.

The nature and acquisition of experience in our profession seems to me misunderstood by men who uphold an apprenticeship. Observations of cases made by men ignorant of the experience of others, ignorant of the structure and function of the animal, and ignorant of the action of the

remedies used, can but lead to erroneous conclusions and wasted opportunities. The acquisition of experience requires that we should have not only a field for observation, but the ability to use it, and the power to verify our conclusions. The "practical man" does not seem to know that every deduction he makes is simply a theory, and that it is more likely to be correct in proportion as he understands his anatomy and physiology, and is able to qualify his observations by comparison with those of other men, who have not only seen, but recorded. Every man who thinks is a theorist; to form an opinion is to form a theory. In medicine there can be no true theory without scientific knowledge; there may be a correct guess. Disease is not a well-defined object; it is a series of events, varying infinitely, according to its cause, position, and surroundings. No two cases are alike. Each must be studied as to its origin, nature, course, effects, and remedy, and this requires at least a knowledge of healthy structure and function, and some acquaintance with the recorded experience of other observers.

A student fresh from college, who has not "seen practice" may have imbibed theoretical fallacies; but these he is able to correct by careful observation, by the test of experience. He, at any rate, possesses that knowledge which is implied in the term "professional skill," and dexterity in applying it, which is called "professional tact," will come in good time. The apprentice, on the other hand, may have collected a mass of observations, which scientific training may in time enable him to arrange and profit by; but he is much more likely to have adopted an empirical practice, possibly precise and methodical, which is mistaken for professional skill, and to have mastered the art of disguising his ignorance, which is mistaken for professional tact.

Why try and force our men into a groove? Let us have free trade in education. If men choose to remove their boys from school to send them drug-grinding and watching phenomena they cannot understand—why, let them. If men choose to enter the veterinary profession with no knowledge of animals, why should we prevent them? In all trades and professions men utterly wanting in any special aptitude are to be found—they find their own level.

Our profession is, to my mind, rich in men conspicuous for their common sense and tact, for the correctness of their intuitive diagnosis, and for the mutual satisfaction existing between their clients and themselves. It is poor in men who record their own experience for the benefit of others, who find a pleasure in medical research for its own sake, and who consider it a duty to try and add something to our collective knowledge. Let us, then, as a body take no step which will place a young man where his whole training is likely to cramp his usefulness to the profession without increasing his value to the public. Let us have time to discuss this question fairly. It is a serious one, and I have reason to think one opposed to the wishes of the best men in the profession.

Yours respectfully,

London, *September.* W. HUNTING, F.R.C.V.S.

WHY IS THE ARMY VETERINARY DEPARTMENT UNPOPULAR?

To the Editor of the VETERINARY JOURNAL.

DEAR SIR,—I will, with a spirit of fairness, attempt to answer the above question. In the first place, I may state that I am not a "ten years' wallah"; secondly, I detest professional *grumblers*, especially those whom no amount of successful legislation would satisfy.

A certain amount of dissatisfaction has evidently become rooted in our ranks, and it would appear that we have at length approached that period so graphically referred to in the case of the "camel and the straw." There is certainly a limit to the long-suffering of humanity, whether confined to mental or bodily torture. From the opinions of the various correspondents who, by your permission, are allowed to ventilate their grievances in your columns, it would seem that we have not as yet reached our millennium, but are still in that blissful state of hope and expectancy. There are times when reticence is reprehensible and disingenuous, and when silence is suggestive of acquiescence. On the other hand, a too free indulgence in platitudes and airy nothings is symbolic of folly. The last army veterinary warrant does not seem to have had that magical effect upon the embryonic veterinary profession I anticipated it would have. Taking the consensus of opinion, the Army veterinary surgeons evidently do not look upon it as the cynosure which is to become their *El dorado*. The small scintillation of excitement that heralded its promulgation has died a natural death.

I will deal first with those members who have negotiated for employ in Her Majesty's service under the new warrant. Having given considerable attention to this subject, I must confess I cannot see what their grievance is, except perhaps that of service and pay in India. The pay in this country is doubtless an injustice to them; for on arrival they draw the same amount as did those in days of yore. But it is useless their using condemnatory language, as they entered the service with their eyes open, and had every means at their disposal for prosecuting inquiry. I do, however, think the *terms* of service are a trifle hard. Suppose any one of them, by climatic influences, becomes incapacitated for work; he is granted a few months' leave to England, on the pay (English) of his rank. If at the expiration of that time he is still unfit, he is allowed an extension of leave *without pay;* should he then be deemed incapable for the further pursuit of his duties, he is "shelved." To the non-initiated these undoubtedly appear harsh terms; and so they would be, if carried out in their entirety. We, of course, none of us know how soon we may become a victim to the effects of a tropical climate; but the cases are extremely rare in which a man in a tour of five years becomes so bodily unfit as to be unable to do some kind of duty, if only in England. And I am sure our worthy Chief would extend every consideration to those deserving of notice, especially if the results were not brought on by their own indiscretion. The last warrant holds out sufficient advantages to induce young gentlemen to join our ranks. The pay is really good and the position fairly so—better, perhaps, than that in private practice. Having tried both, I should *plump* for the service.

Next comes the position of those most affected by the warrant—viz., those expecting their promotion to first class; and it is on them that it has its immediate effects. The veterinary profession is not redolent of capital; hence most men join the service for the sake of £ s. d., and not for honour and favours. It is to them their bread; so that anything affecting that vital interest is at once looked upon with distrust. The warrant could, by a little dexterous manipulation, have been made welcome to all; instead of which, the clause referring to deferred promotion more than counterbalances any good that might have been derived from it as a general measure. To make a contract for any specified results is one thing, but to cancel it by a stroke of the pen, and without rhyme or reason, is another. And I have no hesitation in stating that in commercial or private circles, had the same defection or breach of contrast occurred, litigation would have inevitably followed. Wearing Her Majesty's uniform, we are in a measure powerless. Nevertheless, there is an amount of *esprit de corps* to be kept up, which is not possible when discontent reigns supreme. Mr. Collins was dead against the

clause. The VETERINARY JOURNAL has devoted its pages to a denunciation of it; yet in the face of this, it maintains its position. It is most painful to those hanging on here, with a hope that a re-shuffling of the pack would have alleviated their condition, to find that the sop thrown down in the way of small increased pay becomes obnoxious on account of the odium generated by the above clause. Early promotion not only means increased pay, but a higher *status*, with its attendant advantages. It cannot but be humiliating to witness the members of the medical profession, probably years our junior, distancing us in the race for rank. The cry is "petition." This would profit us little if only backed by our ebullition of feelings. The authorities cannot expect to get good men unless dependence is to be placed on their word. It requires no great ratiocinative powers or intellectual coruscation to conceive that their game is a losing one. It is this chopping and changing, this want of fixity of purpose, that renders the Department unpopular to those who are struggling in its stagnant waters; besides giving an air of uncertainty to its surroundings, and thereby acting as a deterrent to those who are halting between two opinions as to whether to join us or not. They are under the impression that a similar ordeal may be in store for them; so, like wise men, they look before leaping. Some would doubtless present themselves for admission under any circumstances, but these are not the men we want.

Presentation at Court—or, I may substitute, the neglect of it—to my mind causes more humiliation and dissatisfaction than anything pertaining to the Department. It cannot be but generally known to our brother combatant officers that this privilege is denied us, and much sympathy is extended to us on account of this gross injustice. It is a fact that riding and quartermasters are allowed this mark of royal favour! Yet we, who have spent large sums of money in professional and other education, are ignored. Until this degradation is a thing of the past, we must be content with our second-rate, or I may say subordinate social position. We surely have some friends; can they not exercise their influence on our behalf? I take it that a commission in Her Majesty's service is a sufficient guarantee of gentlemanly conduct, and as such, ought to obtain its reward. This is the one great stumbling-block to our social advancement.

Extra duty without pay.—There is reason in all things; but I verily believe that the exception proves the rule in our case, especially in that relating to the extra-charge system. Owing to the paucity of veterinary officers, double duty has in most instances to be performed, and this without any recognition at the hands of Government. Stock representing in the aggregate large sums of money is entrusted to our charge, and one would naturally suppose that in order to have the work well and efficiently done, remuneration would be in accordance with the duty performed; but such is not the case. It is not at all uncommon for a veterinary surgeon to have three or four batteries of artillery, and maybe a cavalry regiment under his charge, and indirectly a large herd of commissariat animals, including elephants, camels, mules, and bullocks, extended over an area of several miles; for this we get no allowance. This would not cause umbrage were no invidious distinctions made in other departments. Take, for instance, a medical *confrère;* if he is placed in extra charge of, say, the staff, garrison, or lock hospitals, or a wing of a regiment, he is remunerated accordingly. Yet we cannot get even horse allowance! Government has, in a measure, to be forced from without to do its duty. The case of two veterinary surgeons is still fresh in my mind. These travelled over immense distances, putting up with great discomforts, in order to inspect animals suffering from contagious diseases. This necessarily entailed considerable expense; yet it was with great difficulty they received travelling allowance. We are not avaricious, but if two batteries of artillery or a cavalry regiment are supposed to be our complement, why foist more

upon us? Personally, I look upon hard work as the means of giving stimulus to the motive-spring, or keeping the balance of health in proper order; but it is the system under which it is carried out that is so objectionable.

Promotion and retirement.—This is a difficult question to manipulate; but all will agree that something ought to be speedily accomplished. We have arrived at that pitch of stagnation which will, before long, cause the direst confusion. It is natural for the senior men to hang on with the hope of receiving the increased rate of pension, but this is detrimental to their juniors; for by so doing, promotion is impeded and dissatisfaction engendered. This subject has, doubtless, received the attention of the authorities, and I hear changes are on the *tapis*. What we want is a sliding scale of pension, on the *bonus* system, whereby it is made agreeable for, say, men of twenty years' service to retire. It is true that, under the new warrant, they are granted certain privileges at this period of service; but the inducements held out are not sufficiently strong to prompt men to go. Most of them, being married, with probably sons and daughters to provide for, are very chary how they accept these conditions. It may be said that they have their profession to fall back upon. Granted; but how many men care to start life again and buffet the world? They of course expect, after devoting the best years of their life to the service, to be able to retire and live, I will not say in luxury, but in comfort. A little liberality on the part of Government would speedily set this point at rest. Measures might be enacted which would meet the urgency of the case, without becoming a sequent of precedent. Then, again, the different grades are open to objection. I would by all means have zeal and ability rewarded, and men of that calibre should have the preference. But we are not all gifted; so let every man have a chance of promotion after ten years' service, irrespective of examination. It is so, I believe, in the medical department. It is essential to have some test as to whether or not we have become drones in matters professional; but ability, if necessary, ought to have its special reward. It would be found that some men do not mind so much being superseded, except that it is prejudicial to their pockets. A special grade should be formed, between first class and inspectorship, and one that would not necessitate the vacation of their then appointment.

Honours, etc.—This subject is barrenness itself. We have not a single member with a tail to his name, and yet men, not to be counted on the fingers, have time back done invaluable service to their country. Take, for example, the late Zulu war. It was acknowledged by everybody that Mr. Gudgin and his staff, by skill and forethought averted dangers which, had they occurred, would have well-nigh annihilated the forces sent out there. Look at the results—Mr. Gudgin has received a good-service pension of £50 per annum, which, I may inform your readers, is similar to that granted to non-commissioned officers. Mr. Glover, also, for his praiseworthy efforts in the above campaign has been recommended for promotion, but the objectionable clause referring to deferred promotion militated against his success. Under the old warrant the same difficulty would not have occurred. These surely are sickening episodes. What stimulus have we? Absolutely none. There is little wonder, then, that difficulty is experienced in bringing the department up to its full complement. Comparisons are often odious, but the line must be drawn somewhere. Contrast other branches of the service; from the highest to the lowest, some distinctive mark of approbation has been awarded. But we alone are left out in the cold. As English subjects we pride ourselves on our freedom, the just appreciation of talent, industry, etc.; but where, so far as we are concerned, is the simile? In any other country, where extremes do not meet, this tardy awakening to our merits would not have occurred. The labours of our leading men would have been acknowleged in a way fitted for the occasion.

The wearisome reiteration of our grievances, which have been deepened by circumstances, may be deprecated by the readers of your Journal, but this is the only outlet of unbiassed opinions, and the means of getting rid of the veneer of departmental sentimentalism. It is an inconvenient reality clothed in a paradoxical garb; and only by comprehensive and forcible exposition may we hope to rehabilitate that confidence we so much stand in need of.

These thoughts have not been strung together with the intention of weakening or embarrassing those who have the steering of our bark; but as incontrovertible facts which, if dealt with in a liberal spirit, would be the means of dispersing those hues of Stygian gloom that at present envelop us. Mr. Collins has a herculean task before him, and if by vigorous action he can evoke order from chaos, or stem the tide of ill-feeling, he will not only earn the thanks and esteem of those who have the honour of serving under him, but a reversionary title to immortality. We know it is difficult to overcome those hypocritical conventionalities which, octopus-like, cling with unwearying tenacity to the skirts of officialism. Red-tapeism is a factor in the service not easily over-ridden—hence the magnitude of the task.

Believe me, yours faithfully,

India, *July*, 1880. "PFERD."

JOTTINGS FROM AFGHANISTAN.

To the Editor of the VETERINARY JOURNAL.

SIR,—On account of postal irregularities, the May number of the VETERINARY JOURNAL has only just arrived, containing the editorial on "Waste of Transport in India." Even now, after nineteen months in the field, the same errors are committed, the same mismanagement exists, as was pointed out in the above-mentioned article. Even with experience gained during the first period of this expedition, identical means were employed to procure beasts of burden, the same class of animal was purchased, irrespective of age, etc.

Sir Donald Stewart's force having to march from Candahar *via* Khilat-i-Ghilzai, and Ghuzni to Cabul, the necessary carriage had to be found, and as only what the Candaharees chose to bring themselves, at their own will and pleasure, was presented to the purchasing committee or board, young growing beasts, to the owners nearly useless, were the only ones purchased, at prices varying from 90 to 120 Rs.

I have no doubt, had the authority of the governor of the province been called into force, and slight pressure—more than what political officers, as a rule, think advisable to apply—brought to bear, camels far superior to those eventually selected could have been found. Their age varied considerably; a large number of them were barely two years of age, and these were the animals expected at once, immediately after being branded with a C or a ↑, to develop into well-seasoned, never to be tired or worn-out carriers, capable of performing the same feats as those belonging to the professional traders, irrespective of make, shape, age, or constitution.

The question of feeding, except during the last few weeks, does not appear to have been looked upon as of first importance. From the various trials made, an impartial observer would be led to believe experiments were being carried on with a view of ascertaining what was the least quantities of corn or forage a camel could live on.

In many cases great difficulties have been encountered by members of the veterinary department during this campaign, in obtaining what they considered sufficient forage for the animals under their care, the quantities received being fixed upon by some omniscient member of the staff, without

in any way consulting those whose daily duty it is to be acquainted with the subject, feeding, under consideration. But then for these officers stable economy is such a simple thing! If rations for troop-horses were settled without consulting veterinary surgeons, is it astonishing those issued to camels never formed a subject for their consideration? I must admit, since the low condition of the beasts has commenced to cause anxiety, officers of the department have of late been called up to assist in fixing the quantities of corn and forage necessary to prevent the animals from becoming unserviceable. Their views in many cases have been found too liberal, and have not met with approval in those places where strict and false economy is the order of the day. I have always been of opinion that the grazing should be supplemented with a corn ration, since the animals, even when halted, have to go some distance before reaching the grazing-grounds, where forage is in sufficient quantity for a large number of them. In some cases, not very numerous, three pounds of Indian corn unground or uncrushed have been allowed as an extra ration. In all cases the grain should be reduced to meal, and given, mixed with a little salt alone, or with other condiments, in the shape of balls. Liberal feeding, as an economical measure, is of the most vital importance, and cannot be too strongly insisted on. With it, condition is higher, working capabilities and power of resistance to disease increased; loss of life is thus considerably diminished. One had only to look at the camels of the different corps and regiments to become thoroughly convinced, *à première vue*, of the truth of the above statement. Among others, the Second Sikhs were renowed for the beautiful, healthy condition of their regimental camels; but then the commanding officer, a man of great experience, who cherished his transport animals as he did his men, possessed full power to feed them as circumstances demanded. The regiment formed part of the justly-renowed Punjab Frontier Force. It cannot, in any future articles that may be published, be impressed too vigorously on those in authority, that the camel, contrary to ideas propagated in works of natural history, travel, etc., is not a hardy, thirst and hunger enduring animal, but requires, as all others from which work is demanded, a liberal diet, as regular as events permit, with the ordinary hygienic measures carefully carried out.

There is another point worthy of attention, and which has, in my opinion, greatly contributed in wearing out camels. I allude to the loading of them. None ought to be allowed to be laden longer than is absolutely necessary; or if military movements demand that camp should be cleared, then the beasts ought to be formed up into lines compatible with the business on hand, and made to sit down until the way is clear or the advance commences. In lots of cases they have been laden twelve hours at a stretch, without any attempt made to relieve them to some extent by letting them sit down.

A question which interests us more than any, is the one of treatment of transport animals. Before I proceed, it may be as well to state that my experience is, in this as in other cases, that members of the veterinary department have only met with slight, have been ignored and neglected. From the niggard allowance made us, the working members of the profession may well ask themselves, On what principle is the scale of pay established?

Here am I, the writer of this, in addition to my regimental work, responsible for the welfare of the sick to be found among

Camels	...	...	...	...	3,148
Bullocks	...	...	...	...	115
Mules	...	...	...	...	1,481
Ponies	...	...	...	...	381
Donkeys	...	...	...	...	836
				Total,	5,961 animals.

For the benefit of my professional advice, my attendance at committees innumerable on sick, unserviceable beasts of all sorts, I am allowed the munificent sum of seventy-five rupees per mensem, from which it will be judged how much work is done for a rupee.

The duty would be pleasant did any organisation exist, or if any proper means of treatment were at my command. There is no such thing as a working staff to be depended on; the medicines at my disposal, for all cases, external or internal, in the camel as the donkey, consist of mustard procurable from the Commissariat Department, a drum of Calvert's Fluid Carbolic Acid, a small cask of vinegar, and a skin of ordinary oil—these necessaries are supposed to meet all requirements. Wounds, of course, are very numerous; abscess, fistulas, fractures of the ribs on either side are often to be met with, surgical operations more or less extensive are of daily occurrence, but no instruments were ever provided. I have been obliged to use those found in the regulation pocket dressing-case, as supplied to batteries or regiments. I referred to the want of instruments, but I forgot they appointed no veterinary surgeon on the southern side of Afghanistan, so of course did not consider the first-named necessary. It was not until Candahar was handed over to the Bombay authorities, the transport department, with its director-general, brigade-major, brigade transport officers, that it was provided with a veterinary surgeon. Perhaps it was a good thing for our own reputation, as it was not until January, 1880 that medicines were supplied to those in charge. We often heard of cases, containing all the veterinary medicines and necessaries the most fastidious could demand, being on the road, having been despatched from so-and-so, etc., but like those supposed to be coming for the use of the regimental veterinary surgeons, they never appeared, until one fine morn a box containing a few things was eventually delivered. During these times it mattered little what the animals suffered from; in internal diseases, as in external injuries, the common ordinary camel-drivers or muleteers, promoted to the elevated rank of salotree, worked their own wicked will, and administered or applied the remedies they had been taught to look upon as panaceas. Nearly every case was treated alike! One of their most favourite modes of treatment for abscess, fistula, etc., was a free application of the firing-iron around, or across the part in every direction, no attempt being made to seek for the cause—in most cases detached pieces of bone. I have known transport officers countenance such barbarous treatment, and when expostulated with, quietly answer—"Oh, these camel-men know what is wanted." I eventually succeeded in convincing them wounds were the same in any case and ought to be treated accordingly. Veterinary surgeons were not expected to take under their care camels; transport officers, with a probe and a common pocket-knife, carried out their own views on the subject of wounds, etc. Is it to be wondered at that such losses occurred?

When the force was quartered at Candahar, there were three veterinary surgeons to attend to one battery of Horse Artillery, two of Field Artillery, one mule battery, and one bullock, or rather elephant battery. I must state one was ordered to Quetta to attend permanent boards on camels, etc., shortly after our much and generally regretted *confrère*, the late Veterinary Surgeon Blanshard was attacked with fever, and I remained alone; but during the first months of the year, had the authorities wished, had the value of our services been known and justly appreciated, professional supervision could have been obtained. I myself never wondered at the indifference displayed, when I heard that the care and treatment of the horses, the property of officers on the staff, were confided to a salotree or native farrier-sergeant. It was only when the disease did not cede to his blind treatment that, either the late Veterinary Surgeon Blanshard or myself were sent for,

or the patient sent to us, with the request, would we be good enough to look at the horse, as he did not appear to improve under the care of the salotree. I have also known military officers of a certain standing send their chargers to be treated in the native cavalry lines, where medicines are generally prescribed by some combatant officer, on the owner's statement of what was the matter, and to whom is confided the supervision of the salotree's daily erratic performances in the way of cramming his patient with medicines, messalehs, etc., etc. This known, it is only natural the value of veterinary advice and supervision should escape the notice of staff-officers, who are in many ways and to a large extent responsible, directly, for the welfare of all the animals attached to the division or army corps of which they themselves form part.

Deaths among animals of all classes have been numerous and, *post-mortem* examinations have, of course, from time to time been made, but more complete examinations and closer observations than we singly, with other duties to perform, could carry out, ought to have been encouraged. I have frequently mentioned the necessity for the most careful investigations into the causes of the immense losses being made, by means of a committee composed of members with no other work to do, and in receipt of what they are pleased to call staff-pay, as an additional inducement beyond professional zeal and ambition for notoriety, to study the anatomy, the physiology, and the pathology of the camel. Among our ranks are to be found members possessing all the qualifications necessary. Are there not microscopists, anatomists, and pathologists who would have been only too delighted to carry out such studies? The treatment of camels would then have been, contrary to what now happens, conducted on scientific principles, and good results have been obtained. I don't know but what the novel position of the professional attendant to a camel train would not have been eagerly sought after.

All the great losses to which you have so frequently drawn attention, have been sustained without any benefit, based on scientific grounds, being derived. I have no doubt after this war, the employment of the camel as a beast of transport will be considerably curtailed. Nevertheless, wherever and whenever, in the lowlands of India, the plateaux of Central Asia, in winter as in summer, the beast under consideration is employed with a large force, marching rapidly through a country, there he will be exposed to diseases of various natures, with which, I have no hesitation in saying, we are but most imperfectly, if at all, acquainted.

Much more could be said upon the subject of transport, and about what has been witnessed and experienced during the last nineteen months by the writer, but, for the present, enough has been made known to enable members of our profession to draw their own inferences upon subjects which are of the utmost importance not only to the State, but to ourselves.

I feel I have already occupied too much of your valuable space, so with the hope that what I have jotted down may prove of interest, I will bring these stray notes to a close.

Yours obediently,

C. CLAYTON, M.R.C.V.S.,
Royal Artillery.

Cabul, *August 4th.*

SOAP AND WATER.

To the Editor of the VETERINARY JOURNAL.

SIR,—Will no one impress upon students the necessity for a more extended use of those cheap commodities—soap, water, and clean linen? For dirty collars there is no excuse; yet those acquainted with students, no matter whether of law, divinity, or physic, must have observed that with many of

them, cleanliness is not apparently considered a virtue. On Sunday there is nearly always to be seen clean linen round the throat and wrists, but then there is a gradual decline until clean-collar day again comes round. For veterinary students at least, and it may be said for all others, there is no excuse for want of cleanliness, and nothing lowers a man more than a dirty appearance; *it shows a great want of self-respect.* The money expended by even exemplary students for washing, is really only a trifle; and if the dirty ones would only take every week a few glasses of beer or a couple of glasses of whisky less, and give the money so saved to the laundress, the appearance of the class-rooms of the various colleges would be considerably brightened. Why should any student think himself entitled to disgrace his college and its professors, as well as himself, by going about in dusky linen? and why should professors allow a musty-looking fellow to enter the lecture-room? To permit this is to permit the teacher to be insulted, and if offenders against good manners and decency in this respect were even only mildly noticed, no doubt a reformation would soon take place. A rivalry amongst the colleges in this matter would be highly commendable. The above observations apply still more forcibly to students presenting themselves for examination. Consideration for the feelings of others is always desirable, but it should not be extended to inexcusable dirt; and therefore the suggestion is offered that not only professors, but the leading students of the colleges, should constitute themselves a sanitary police against it. The slight trouble would be well repaid by the higher estimation in which they would be held, not only by the public, but by themselves.

Your offended but hopeful servant,

London, 14*th September*, 1880. HYGEIA.

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from C. Clayton, Army Veterinary Department, Afghanistan; W. R. Burke, Warwick; I. H. Cox, Madras Cavalry, Bellary; "Pferd"; Dr. Thin, London; Professor Walley, Edinburgh; "Hygeia"; T. Greaves, Manchester; W. Leather, Liverpool; W. A. Hurrell, South Minster; G. Carless, Worcester; W. Hunting, London; T. A. Killick, Army Veterinary Department, Allahabad; J. C. Dwyer, Royal Artillery, Woolwich; "F.R.C.V.S."

BOOKS AND PAMPHLETS: Jahresbericht der K. Central Thierartzneishcule in München; *E. Zorn*, Die Anomalien der Milch; *Van Peski*, Etudes Historiques sur la Tuberculose Pulmonaire; *J. T. Duncan*, Contagious Diseases of Cattle; *C. Schreiber*, Schwab's Katechismus der Hufbeschlagkunst; *W. P. Wainright*, Radical Mechanics of Animal Locomotion.

JOURNALS, ETC.: *Recueil de Méd. Vétérinaire; Der Thierarzt; Mark Lane Express; Farmer; Agricultural Gazette; Annales de Méd. Vétérinaire; L'Echo Vétérinaire; Wochenschrift für Thierheilkunde; Live Stock Journal; Journal of the National Agricultural Society of Victoria; Archives Vétérinaire; Chicago Live Stock Journal; American Veterinary Review; Journal de Zoötechnie; Medical Press and Circular; Revue für Thierheilkunde und Thierzucht; Lancet.*

NEWSPAPERS: *Providence Daily Journal; Madras Mail; Oldham Chronicle; Moniteur de Lyon; Globe; Melbourne Weekly Times; Irish Times; Melbourne Illustrated Sketcher; Dublin Express.*